Aspects of labour turnover in British manufacturing

Bradley, Edmund H.

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ASPECTS OF LABOUR TURNOVER IN BRITISH MANUFACTURING

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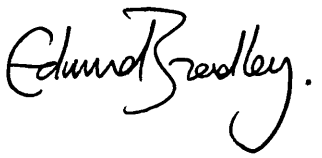

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Summary

This thesis sets out to examine the relationship between labour market segmentation and employee turnover in British manufacturing. A short Introduction is followed by a review of the relevant literature on labour market models in Chapter 2. In Chapter 3 we examine the validity of labour market duality by considering a number of empirical studies testing some key hypotheses of the segmentationalists' theory. Labour turnover in a company context, particularly its definition and measurement, is considered in Chapter 4.

The remainder of the thesis is empirical. We use published data to run a number of time-series (Chapter 5) and cross-sectional analyses of quitting (Chapters 6 and 7). It is apparent that short service employees (those with less than two years' service) for example quit up to four times more often than long service workers. Moreover, our findings also point to quitting being higher among females than males.

Chapters 8 to 11 are devoted to case studies of labour turnover in three diverse manufacturing companies. These studies were undertaken in the early 1980s at a time of rapidly rising unemployment. We discover that variations in quit rates among workers of different sex and/or length of service are similar to those at the national level. Also noticeable is the fact that workers in some occupations seem to display greater rates of instability than workers in others. In addition, the results from our inter-firm study provide evidence of the operation of internal labour markets in all three

companies. Here, however, it must be said that the extent of internal movement varies considerably between different occupations and functions within each firm, as well as between the firms themselves.

CONTENTS

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Chapter 1 Introduction

This thesis is concerned with measuring and understanding the process of labour turnover. It accepts the notion that there exists some sort of dichotomy in the labour market and the phenomenon of quitting is set in this context. Numerous writers have considered the postition of disadvantaged workers in the labour market and why in particular certain groups display greater instability than others. We review the relevant theoretical literature in relation to labour market models and follow this by reviewing the empirical evidence for the existence of a dual labour market. The remainder of the thesis is concerned with measuring the importance of turnover and understanding the nature of this process. A series of empirical studies is undertaken which involve time-series and cross-sectional analyses of turnover using data published in the Department of Employment Gazette as well as detailed case studies within three companies.

At present, turnover in manufacturing remains high, perhaps surprisingly so given the economic recession and the record post-War levels of unemployment. Thus the average quit rate in manufacturing in 1983-84 was 1.7 per 100 workers per four week period, implying an annual turnover rate of 22.1%. Superficial consideration of this statistic suggests a complete turnover of the manufacturing labour force within a 4-5 year period. Thus Nicholas Owen (1983), an economic adviser at the Department of Industry, argues that the British adjustment of the changing patterns of trade within the European Economic Community is relatively easy because:

"the number of annual job changes in British manufacturing is

> equal to 20% of the total workforce. Mobility of this order facilitates the rapid absorption ..... of redundant employees, and this even in conditions of recession" (p.157).

Such an important conclusion is not valid and is based on a misunderstanding of the turnover process.

Labour turnover is currently highest in Fruit and Vegetable Products (Minimum List Heading 218) where the overall quit rate in 1983 was 45.5%. This rises to 59.8% when female workers are considered. It is easy to interpret these figures as catastrophic for the industry, but this may not necessarily be the case. We shall, in the course of this thesis, show that certain groups of workers are more prone to quitting than others - the young, those with short lengths of service, and workers in certain occupational categories. We shall also argue that if it can be established that it is these workers that make up the bulk of quitting, then high turnover may not be that troublesome. Indeed, in our case study of Company E (see Chapter 8), we see this happening; voluntary turnover is extremely high, yet the company does not consider it has a turnover problem.

Clearly, while some industries suffer from high rates of turnover others experience low rates of quitting. The overall quit rate in Insulated Wires and Cables (362) for example was very low in 1983 at 10.7%. It was even lower among male workers in Printing and Publishing of Newspapers (485) at 7.8%. While at first glance this might appear to be the ultimate situation in a firm, other factors may suggest otherwise. The majority of firms may well attempt to keep turnover down to an acceptable minimum, but there are also those who will actively encourage high turnover especially when

attempting to modernise operations by substituting capital for labour.

Chapter 2 appraises a number of different labour models, each having as a common theme the primary-secondary division in the labour market. We shall attempt to trace the development of such theories from their inception, usually taken to be the early 1950s, through to the present day. The development of the theoretical literature has essentially been an evolutionary process which has tried to take account of the inherent complexity of the labour market. No single theoretical approach has succeeded in gaining universal acceptance. However, Chapter 2 does recognise the importance of the internal labour market as developed by Doeringer and Piore (1971), and a major section is devoted to assessing the value of this concept, particularly in relation to the company case studies.

In Chapter 3 we examine the validity of labour market duality by reviewing a number of empirical studies testing some key hypotheses of the segmentationalists' theory. Here, for example, we consider evidence showing how job tenure and labour turnover rates can vary among different groups of workers; also considered are the extent of sex discrimination and occupational segregation in the labour market, the role and importance of internal labour markets and relative earnings and/or occupational mobility.

We consider the importance of labour turnover in a company context in Chapter 4. Any firm which wishes to monitor its evolving manpower situation must first decide what constitutes turnover and

then how to measure it. To this end we look at a number of different definitions of turnover and then consider the benefits and faults of some of the more obvious alternative measures. These different measures are then used when undertaking the three case studies.

In Chapter 5 we conduct a time-series analysis, for males and females separately, of the manufacturing quit rate between 1949 and 1983. Economic conditions, as measured by total unemployment, have changed dramatically over this 35 year period and such a factor will be expected to affect quitting behaviour. The model used also allows for differences in quitting between new recruits and long service or core employees. The approach adopted is generally successful and provides valuable insights into the way quitting has been changing over time.

The main factors that can influence the propensity to quit are considered in Chapter 6. Factors relating to the individual (sex, age, length of service, marital status, part-time employment) and to the organisation (skill mix of the labour force, wages, employment prospects, size) are all considered in detail. This is a prelude to a cross-section analysis of quitting between 104 MLHs in 1968 which is presented in Chapter 7. Some potentially important variables are not quantifiable at the MLH level and there is a brief discussion in Chapter 6 of the likely relationship between these factors and the propensity to quit. Finally, Chapter 6 also reviews some British and American studies that attempt to explain inter-industy variations in manufacturing quit rates. Particular attention is given to a study by Shorey (1983) which also uses MLH data for British manufacturing and

tries to assess the importance of sex specific differences in determining quit rates.

A major weakness of earlier cross-sectional research on quitting was the inadequate specification of the functional relationship between the independent variables and the level of quitting. Hence, Chapter 7 contains a full explanations of the model, which was estimated using non-linear techniques, and a detailed discussion of the variables used in the analysis. This is followed by a presentation of the statistical results for both male and female quit rates. Finally there is an assessment of the relative sensitivity of quitting to changes in the explanatory variables. Length of service was found to be the most critical variable, quit rates for new recruits being dramatically higher than for long service employees.

Having considered variations in turnover over time and in a cross-section of MLHs at one point in time, we then turn our attention to studying the labour market at the company level. This involved a comprehensive analysis of the labour market situation in three quite different manufacturing companies. For Companies E and D the studies started in February 1980 and lasted for twelve months (see Chapters 8 and 9). The study in Company A however commenced in January 1976 and was carried through until the end of 1980 (see Chapters 10 and 11). Company E is in the chemical industry and the other two are engineering companies. All three differ markedly with respect to the nature of their products, their production techniques, their labour requirements, the skill mix of their workforce, etc.

Unfortunately, no information was forthcoming on wage levels in the three companies. However, the following generalisations can be made. Workers in Companies D and A were relatively well paid compared to workers in the local labour market. Wage levels in Company E however were extremely low for production/assembly workers, although they appeared close to the norm for most other workers.

All these company studies required a detailed manpower audit to establish the manpower stock at some base date. This involved collecting information on variables such as sex, age, age-at-joining, length of service, occupation and functional area for each employee. The emphasis here was on collating data that was readily available in the personnel department in each of these companies. We also collected data on all starters and leavers and monitored any internal manpower movement that took place. This enabled us to study the process of labour turnover and the operation of the internal labour market.

Some practial problems were encountered while collecting and processing this data however. Establishing an effective and operational classification of occupations which was consistent between the three companies was particularly difficult. Problems arose at numerous levels due to:

(a) inconsistencies in the use of occupational titles within a company

(b) errors and/or inconsistencies in the coding of occupations within a company

(c) inconsistencies in the coding of occupations between companies.

In the end, we decided to adopt a system based on the annual L7A classification used by engineering firms in an annual employment survey by the Department of Employment. This in itself presented us with another problem, namely coding occupations in the non-engineering firm using a coding system specifically devised for the engineering industry. By contrast, the classification of manpower by function was much simpler. This was based on a seven category schema that was designed to be generally applicable to all the companies in the study.

These company studies provide a valuable insight into the workings of the labour market at the company level. While generalisations are made difficult by the diverse nature of the three firms we do notice dramatic differences in their turnover. These are considered in Chapter 12 where an attempt is made to examine the labour situation in each company against the backdrop of dual labour market theory. This final chapter also reviews the important conclusions from the whole thesis.

Chapter 2 Labour Market Models - A Review of the Literature

2.1 Introduction and Background to Dual Labour Market Theory

Classical economists always regarded the labour market as a perfectly competitive one where every job was open to every worker on the same terms and conditions. Consequently, discrimination on the grounds of sex and race did not, or could not, take place. Moreover, each worker was entitled to offer his (or her) services at a rate below that asked by his (or her) competitors, while no firm could offer workers a wage below the going rate for fear of losing employees to other firms paying that rate. Clearly then, the classical view of the labour market was one where wage rates produced the necessary adjustments when conditions in the market place changed. But perhaps more significantly, they envisaged only one labour market in which there was complete labour mobility and "open" job structures such that any worker could move into any job.

The real world however is far removed from this. Competition between firms as employers and workers as employees is not perfect; discrimination takes place on a large scale. It is insufficient to claim that wage rates alone respond to changing conditions in the labour market when other factors such as training, education, discrimination, etc., also play an important role. Furthermore, assumptions of frictionless labour mobility and "open" job structures are also ill-founded.

Clearly, many of the assumptions underlying the classical model of the labour market were unrealistic and had either to be modified or replaced. Many writers felt that the latter course was

the only sensible one to take because, as Loveridge and Mok (1979) commented:

> "market imperfections exist on a scale too large to be considered 'frictional'or short-term. While ignorance of market opportunities may explain some apparent inefficiencies in the allocation of labour, the statistical pattern of employment suggests systematic discrimination against certain types of people, for example women, coloureds, immigrants, the very young, and older active members of the work population. At the very least the large and persisting differential in earnings and job opportunities displayed between these groups and that of prime white males is a challenge to orthodox economics" (p.4)

In an effort to replace the classical model, a number of economists started to develop alternative models of the labour market. Cairnes (1874) was one of the first to question the idea of a perfectly competitive labour market. In its place he hypothesised a theory of non-competing groups which could be distinguished according to various occupational, geographical and institutional boundaries. Writing in 1874 he noted:

> "No doubt the various ranks and classes fade into each other by imperceptible graduations, and individuals from all classes are constantly passing up or down; but while this is so, it is nevertheless true that the average workman, from whatever rank he be taken, finds his power of competition limited for practical purposes to a certain range of occupations, so that, however high the rates of remuneration in those which lie beyond may rise, he is excluded from sharing in them. We are thus compelled to recognise the existence of non-competing industrial groups as a feature of our economy" (from Kerr 1954, pp.93-94).

This chapter will review the development of the literature on labour market models, taking a broadly chronological approach. The contributions of certain authors are considered critical and Figure

2.1 highlights, in a schematic way, the main features of the various models. The figure clearly shows the evolution of the different models, each successive development extending and refining the concepts and approaches of the earlier models. However, one common theme that runs throughout is some concept of duality in the labour market.

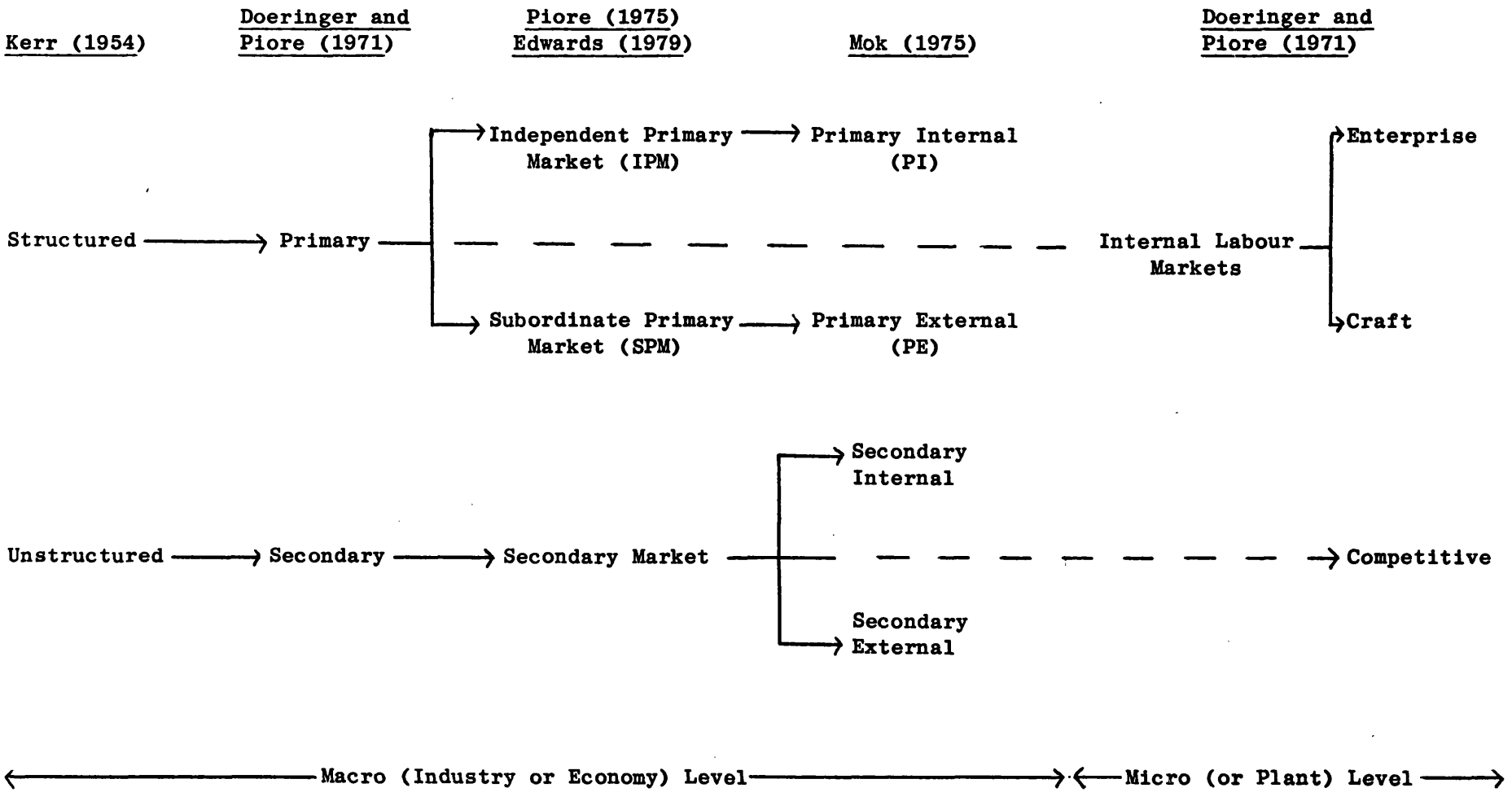
2.2 Developments in the 1950s

It was not until the early 1950's that an increasingly large body of (American) labour economists began to develop alternative models of the labour market. The existence of large groups of non-white and female workers who were being discriminated against in the market place first prompted them to investigate the possibility of different labour markets for different workers. One of the first to do this was Kerr (1954) who developed an institutional model where the labour market was seen not as one completely open and competitive market, but as a series of different markets separated by boundaries determined by geographical, occupational and institutional factors. These boundaries in turn were seen to result from rules (both formal and informal) which determined, among other things:

> "which workers were prefered in the market or even which ones might operate in it at all ..... Such institutional rules are established by employers' associations, by the informal understandings of employers among each other (the 'gentleman's agreement') by companies when they set up their personnel policies, by trade unions, by collective agreements, and by actions of government" (p.93).

For the most part Kerr believed these boundaries were, on the whole, separate such that some workers would be in one market that was

Figure 2.1 Labour Market Models



completely delineated by one boundary, while other workers would be in other markets delineated by other boundaries. "Markets are more specifically delimited, and entrance into them, movement within them, and exit from them more precisely defined" (Kerr 1954, p.96). Clearly then, employer preference for some workers, and employee preference for some firms can be built into this model. In Kerr's words:

> "Labour markets are of two broad types: (1) the structureless and (2) the structured. In the structureless market there is no attachment except the wage between the worker and the employer. No worker has any claim on any job and no employer has any hold on any man. Structure enters the market when different treatment is accorded to the "ins" and to the "outs". In the structured market there always exists (1) the internal market and (2) the external market. The internal market may be the plant or the craft group, and preferment within it may be based on prejudice or merit or equality of opportunity or seniority or some combination of these. The external market consists of clusters of workers actively or passively available for new jobs lying within some meaningful geographical occupational boundaries, and of the ports of entry which are open or potentially open to them" (p.101).

Kerr's argument that many jobs can be found in the internal market implies that, with the exception of the limited port of entry jobs, a large number of jobs are filled by some sort of internal process. His notion of labour segmentation was one touched upon earlier by Reynolds (1951) who claimed that it resulted from imperfect information regarding jobs both within and outside a worker's organisation, as well as restricted geographical mobility. According to Reynolds:

> "The typical worker has no sensation of being in 'a labour market'. He has no idea of the full range of jobs, wage rates, and working conditions prevailing in the area nor does he have any idea of the hundreds or thousands of job vacancies available on a particular day. At most he knows about a few

> jobs which have come to his knowledge in a haphazard way ..... If he comes across a 'good' job he takes it, not worrying about whether a better job is somewhere else" (p.85).

Returning to Kerr's argument it would appear that we are dealing with two issues here: a dualistic labour market structure (the structureless and the structured) and within the structured market the differentiation between internal and external markets. It is difficult however to talk of one without the other, particularly as the internal labour market forms such an intricate part of what has become known as the structured (primary) sector. Yet, that said, the distinction between the dual labour market and the concept of internal labour markets is an important one. Internal labour markets for example are to be found within firms such that <u>each</u> firm can have its <u>own</u> internal labour market. Consequently, when wishing to study individual plants it is often sufficient to rely on internal labour market analysis. When moving from the micro (plant) level to the macro (industry or economy) level however, internal labour market analysis is not sufficiently generalised. This is important because it must be remembered that the most suitable framework or model used depends on the focus of analysis, and in our case the focus is the company. A much more useful concept of segmentation at the macro level then is contained in the theory of dual labour markets, namely the distinction between primary and secondary markets which can be likened to Kerr's structured and unstructured markets respectively.

2.3 <u>Dual Labour Markets</u>

It was not until the late 1960s (see Averitt 1968) that the dual labour market hypothesis began to be seriously considered as an

alternative to other models describing the workings of the labour market, including the (neo)classical model and the human capital model put forward by Oi (1962), Schultz (1963) and Becker (1964) (1). Studies carried out of workers in a number of urban labour markets in the United States by Baron and Hymer (1968), Doeringer et al. (1969), Bluestone (1970) and Vietorisz and Harrison (1970) for example, revealed that white urban males appeared to be operating in an entirely different labour market to that of urban blacks and other disadvantaged groups. But it was not simply a case of blacks, etc., receiving lower rates of pay, having greater job insecurity and so on than white workers. After all, workers employed in semi- and unskilled occupations (the majority of blacks and other ethnic minorities) cannot expect to enjoy the same conditions of employment and financial rewards as skilled and professional workers (the majority of whom are often white). What intrigued this group of economists was that, for any given level of human capital, certain groups of workers received lower incomes and were subject to worse conditions of employment than other employees. Moreover, disadvantaged groups seemed to be trapped in a labour market that operated in a way that differed markedly from that of more privileged groups. For example, career ladders (or lines of progression) seemed almost non-existent in what they termed the disadvantaged 'secondary sector' of the labour market while they formed an important and integral part of what was labelled 'primary sector employment'.

The earliest models of labour market segmentation envisaged two separate labour markets: one offering high wages, employment stability, job security, good working conditions and chances for

advancement called the primary labour market, and one offering low wages, little employment stability or job security, high rates of labour turnover, poor working conditions and little or no opportunity of advancement termed the secondary labour market. To this may be added the fact that secondary workers receive little, if any, on-the-job training (2). Doeringer and Piore (1971) for example identified distinctions between workers in the two segments that "parallel those between jobs" (p.165) such that secondary workers were seen to to display, among other things, higher rates of turnover and greater rates of absenteeism and lateness than workers in the primary sector. One important consequence of this of course was that secondary workers would be poorly paid.

Piore (1980) identifies four principal reasons for the development of dualism in the labour market. First, he argues that "employers have an incentive to treat workers like capital when they have invested in the worker's training" (p.25). This implies that dualism in a capitalist economy has its origins in 'efficiency'. In his words: "it would tend to maximise the product in a static economy and in a developing economy it contributes to economic growth" (p.25). His second explanation is that, as a result of trade union pressure and collective agreements, employers have been forced to recognise the efforts of certain groups of workers to "escape their position as a residual factor and to secure their jobs" (p.25). Piore's argument here is that technological progress has resulted in labour becoming a residual factor in the manufacturing process. Consequently, those workers in a position to influence their economic status by way of collective action and/or political pressure will

attempt to impose restrictions on the way in which employers treat them. Closely related to this, and the third reason for labour market duality, is the national employment contract between workers and employers whereby "the latter, in return for certain concessions in the level of wages, agree to stabilise the variability of wages and employment" (p.25). Finally, Piore emphasises the role class struggle has played in dividing the labour market when he argues that duality may have resulted from "the efforts of employers to divide what would otherwise be a united working class and stave off the revolution" (p.25). This last argument is very much in keeping with the theory of labour market segmentation as developed by Radical school of economists led by Edwards, Reich and Gordon, and is one we shall consider in greater detail in Section 2.6.

Clearly then, Piore believes the reasons for labour market duality lie principally with "the organisation of production on the demand side of the market and, in the last three versions, among the workers of the primary labour force" (p.25). But this still does not explain why certain groups of workers seem to be confined to secondary sector employment. Recognising this Piore, in an earlier work, offers some suggestions for this. His hypothesis takes the form of a series of arguments that can be presented as follows. First, he argues that primary workers are expected to '<u>behave</u>' differently to secondary workers. They are expected to display stable work habits by avoiding the high rates of lateness, absenteeism and turnover that secondary workers are typically depicted as portraying. So important are the various behavioural traits and characteristics of different kinds of workers that Piore argues they often outweigh other

important characteristics such as work skills.

Second, Piore lists discrimination against workers on the grounds of sex, race, education, etc, as another important factor. He argues: "Such traits tend to be statistically correlated with job performance but not necessarily (and probably not usually) causally related to it" (1970, p.56). He also distinguishes between two types of discrimination: '<u>statistical discrimination</u>' and '<u>discrimination pure and simple</u>'. While statistical discrimination results in employers discriminating against workers who are members of certain groups that are seen to possess undesirable characteristics such as instability and unreliability, discrimination pure and simple is typical of firms discriminating against workers more on individual grounds. In practice however there is little difference between the two.

Third, the distinction between the primary and secondary sectors is not so much technologically as historically determined for Piore believes that a large number of primary/technological jobs can be carried out in the secondary sector (he cites sub-contracting and temporary help services as two examples). It might be argued here then that because the split is a historical one, it is has become increasingly difficult to remove because this would involve costly and far-reaching changes in the "techniques of production and management and in the institutional structure and procedures of the enterprise in which the work is performed" (Piore 1970, p.57).

Fourth, the behavioural characteristics of secondary sector workers are inevitably going to be reinforced by their close

association with other secondary sector workers, both inside and outside work. Thus, workers who might once have fitted into primary sector employment, but failed to find primary sector work for one reason or another, find that after a period of secondary sector employment they soon begin to develop the traits and characteristics of secondary sector workers including irregular work attendance, lateness, and any general instability.

Finally, it would seem that many lower income workers actually prefer to work in the secondary sector because such employment does not necessarily disqualify them from receiving welfare assistance. As Piore notes:

> "The public assistance system discourages full-time work and forces those on welfare either into jobs that are part-time or into jobs that pay cash income which will not be reported to the social worker or can be quickly dropped or delayed when the social worker discovers them or seems in danger of doing so" (1970, p.57).

2.4 Multi-Segmented Models (3)

Later studies argued that there was need for a more precise definition of the primary and secondary sectors. Simply distinguishing between these two sectors clearly left a primary sector and secondary sector of great variety. Differences within the two groups were eventually seen to be as important as differences between them. In an effort to extend the dual model further, Bluestone (1970) identified a tripartite model of labour market segmentation when he argued that the economy consisted of three distinct sectors: the core, the periphery, and the irregular. Workers in the core economy (defined as that proportion of the economy

containing capital intensive industries (4)) were seen as receiving relatively high wages, enjoying favourable working conditions, etc. Workers in the peripheral sector (mainly labour intensive industries (5)) however were seen to receive few of the benefits associated with work in the core. Workers in the irregular economy (the remainder of the economy after account had been taken of the core and periphery) on the other hand were depicted as receiving higher wages and better working conditions than workers in the periphery, but were not seen to be as upwardly mobile as workers in the core. In terms of upward mobility then, workers in the periphery and the irregular economy were seen as sharing similar institutional barriers, ones Bluestone argued were "erected either capriciously or purposefully by firms, by unions, and by the explicit or implicit action or inaction of government" (p.26).

Following this others, in particular Piore (1975) and Edwards (1979), also divide the labour market into three separate segments. Piore and Edwards both envisage two distinct tiers within the primary sector (Piore distinguishes between an "upper" and "lower" tier while Edwards distinguishes between an Independent and Subordinate Primary Market) and a separate secondary sector. Piore sees jobs in the upper tier of the primary sector (or to use Edwards's terminology the Independent Primary Market (IPM)) as being similar to those in the lower tier (or Subordinate Primary Market (SPM)) insofar as they offer stable employment and good terms of pay. Employment in the IPM also offers workers greater opportunities for advancement via well-defined lines of progression. Not only is upward occupational mobility <u>within</u> the firm likely during a worker's

career, but upward occupational mobility can also be realised by movement between firms, inter-firm mobility here being facilitated by IPM workers possessing general rather than firm-specific skills. The fact that labour mobility between firms is commonplace in the IPM therefore indicates that patterns of mobility here tend to resemble those in the secondary sector more than they do those in the SPM with one crucial difference: while labour mobility in the IPM often results in promotion, this is not so with secondary labour market mobility. Job autonomy and responsibility also tend to be greater in IPMs, and there is often a much higher return to age/experience and education. Indeed, so important a pre-requisite is education that Piore (1975) believes a lack of it prevents employment in the IPM.

But how do we distinguish between the different types of jobs to be found in the IPM sector as well as the different types of workers to be found there? Regarding these questions Edwards (1979) writes:

> "Three groups of jobs dominate the independent primary market. The first fills the middle layers of the firm's employment structure and consists of jobs for long-term clerical, sales, and technical staff, foremen, bookkeepers, personal and specialised secretaries, supervisors, and so on. A second group of independent primary jobs grows out of craft work that employs electricians, carpenters, plumbers, steam-fitters, and machinists. A third large group of independent primary jobs includes the professional positions - accountants, research scientists, engineers, registered nurses and doctors, lawyers and tax specialists, and others. As the jobs in these three groups indicate, the independent primary market, like the other segments, spans both blue- collar and white-collar work" (p.174).

Precisely which of these three layers workers are to be found in influences factors such as job security, pay and the type of

mobility they might undertake for the sake of advancement. Workers from the middle layers of a firm tend to be rewarded according to experience, seniority and thus length of service. Quitting to go to another firm often involves a loss of seniority (and perhaps other benefits) and this might affect opportunities for advancement in their new firm. Hence, turnover is discouraged by making job advancement (and its associated benefits) a function of job tenure.

Workers in the lower (craft) and upper (professional) layers on the other hand tend to pursue lines of progression that often transcend the firm so that inter- and intra-firm mobility are equally important to them.

Regarding unemployment, workers in the IPM may also experience a greater number of spells of unemployment than workers in the other markets but this, more often than not, tends to be voluntary. However, workers in the IPM have a much lower probability of being laid off or made redundant than workers in the other two sectors. Edwards also believes that workers from the lower (craft) layer share many of the same experiences as workers in the secondary sector when it comes to unemployment and redundancies with one important exception, namely that when craft workers become unemployed they remain unemployed <u>craft</u> workers, always looking to return to employment within their occupation. Unemployed secondary workers by contrast look to re-enter employment in any type of job. Furthermore, while it may be true that unemployment rates among secondary workers are higher than among primary workers, unemployment here is predominantly short-term, consisting largely of a core of frequent

job-changers.

Jobs in the SPM can be distinguished from jobs in the secondary market by a number of characteristics. Not only are occupations more clearly defined, but there is much greater opportunity for advancement also. Jobs in the SPM also tend to be characterised as being held by workers who are members of trade unions, and are thus better organised, more stable and better paid than jobs in the secondary sector. These jobs differ from those in the IPM insofar as they tend to require fewer skills and less on-the-job training, are often repetitive, have less autonomy and responsibility with advancement depending very much on seniority. It is this last characteristic that provides workers in the SPM with perhaps their greatest incentive to remain with one employer.

Seniority also plays an important part when it comes to laying-off workers. Whereas the risk of being made unemployed in the secondary sector is very much 'part of the job' and can occur at any time regardless of economic climate, unemployment in the SPM tends to be a feature of economic depression with those usually made redundant having the lowest lengths of service.

Another important difference between subordinate primary employment and secondary employment is the fact that there are far greater returns to age and/or experience and education in the former. According to segmentation theory, it is to be expected that earnings in each of the three segments are subject to different influences. The fact that the secondary market is unstructured and caters for unskilled occupations suggests that experience and/or education play

very little part in determining earnings. In the two primary segments however earnings are very much influenced by factors such as age (experience) and education, this being a direct result of their more extensive structuring (though wages in the upper tier tend to be subject to more variation than in the lower). The types of job to be typically found in the SPM sector include the more traditional ones such as many blue collar occupations in heavy industries including steel, shipbuilding, etc, and lower-level clerical occupations.

An interesting variation on the above theme is provided by Mok (1975) who, in his multi-segmented model of the labour market also differentiates between two elements within the primary sector: a primary internal sector (PI) and a primary external sector (PE). While both share many of the same characteristics as the two primary sectors in Piore's and Edwards's models, one important difference remains. Mok's equivalent of the 'lower' tier/SPM, the PE, overlaps fairly extensively with the external labour market, and thus provides "the open exchange between job structures" (Loveridge and Mok 1979, p.125) that Mok believes is an essential feature of the way in which the primary and secondary markets interact with one another.

But the most crucial difference between Mok's model and that of Piore and Edwards lies in his treatment of the secondary labour market. While Piore and Edwards considered the secondary market to be a <u>single</u> market, Mok argued that two separate sectors could be identifed. One he termed a secondary internal sector (SI) where jobs require a certain degree of skill and some on-the-job training, the other he called a secondary external sector (SE) where

little or no skill is needed and very little, if any, on-the-job training is provided. Other characteristics of the SE sector include low wages, lack of autonomy and responsibility, poor working conditions, few opportunities for advancement, and employment instability. There is little in fact to differentiate it from the external labour market.

However, Mok is in agreement with Piore (1975) and Edwards (1979) about the essential differences between primary and secondary sector employment. All three models view secondary sector jobs as being less attractive than primary sector ones, with many of the workers confined to secondary sector employment often finding little or no incentive to become stable employees. Loveridge and Mok (1979) however urge caution when considering this point for they argue:

> "We must be careful, though, not to conclude that jobs are secondary because of the marginality of the workers: it is very easy to confuse the propensities of jobs with the characteristics of job holders" (p.66).

This of course begs the question: is it the job and its various characteristics that are the main features of secondary market employment, or is it the worker and his various characteristics that dominate? Without doubt, certain types of workers tend to gravitate towards secondary employment - young women and blacks for example. But what needs to be firmly established is whether it is the characteristics of these groups that gives rise to employment instability in the secondary sector, or whether it is the nature of the jobs they hold. Insights into this aspect can best be considered by moving from a macro-style analysis to a micro one.

2.5 Internal Labour Markets - A Micro Analysis

In moving to the micro level we shall rely heavily on the work of Doeringer and Piore (1971) and their analysis of the workings of internal labour markets within firms. They define internal labour markets as administrative units within which:

> "the pricing and allocation of labour is governed by a set of administrative rules and procedures ... It can be distinguished from the external market of competitive economic theory where pricing, allocation and training decisions are controlled directly by economic variables" (pp.1-2).

They go on to suggest that these internal markets:

> "appear to be generated by a series of factors not envisioned in conventional economic theory: (a) skill specificity, (b) on-the-job training, and (c) customary law" (p.13) (6).

When talking of skill specificity (7), Doeringer and Piore steer clear of Becker's (1964) terminology which distinguishes 'specific training' (defined as "training that has no effect on the productivity of trainees that would be useful in other firms") from 'general training' (which "increases the marginal productivity of trainees by exactly the same amount in the firms providing the training as in other firms") (Becker 1964, p.18). Instead they attach the terms specific and general mainly to skill and to the number of times various skills can be used within different internal labour markets. As such, a completely specific skill is defined as "unique to a single job classification in a single enterprise", while a completely general skill is "requisite for every job in every enterprise" (Doeringer and Piore 1971, p.14).

For the employer, not only will all this investment in

skill increase training costs, but it will also result in an increase in the cost of recruitment and screening, the two being inter-related. For if a firm is going to undertake such large expenditure on training, it will find it essential to recruit the right type of worker, and this may prove expensive. However, the absolute cost of recruitment and screening may well be reduced by economies of scale and standardisation. But, as Doeringer and Piore point out, "the reduction in turnover which skill specificity encourages increases the employer's willingness to accept these costs" (pp.14-15).

It is the primary sector that contains these internal labour markets, which comes as no surprise considering it is skilled workers that are to be found in the primary sector. The development of internal labour markets within the firm enables the organisation to reconcile:

> "the differences between the skills and abilities of the labour force and the requirements of jobs ..... through a series of instruments which are controlled within the internal labour market ..... These instruments - recruitment procedures, training, compensation, and the like - exist because a number of functions conventionally identified with the competitive labour market have been internalised in the enterprise. These instruments individually and collectively, constitute a series of labour market adjustment processes by which the internal labour market adapts to changes in both production techniques and labour market conditions" (Doeringer and Piore 1971, p.189-90).

Thus, it is the development of internal labour markets that has enabled firms to draw up rules governing vertical (occupational) and horizontal movements within the enterprise (8). According to Kerr (1954) it is these rules that "set sharper boundaries between the 'internal' and 'external' markets and define more precisely the

points of entrance" (p.101). It is these so-called 'points' or 'ports of entry' that link the internal and external markets, and it is the development of an internal labour market that leads to labour market duality. While one group of jobs within a firm are filled internally by workers already with that firm and to which outside workers are excluded, another group of jobs are filled from external sources. Internal labour markets also serve the dual purpose of guaranteeing workers in the primary sector the chance to advance to better jobs, thereby (in theory at least) reducing labour turnover and maintaining production (9).

Turning to 'on-the-job training' or, to be more precise, the 'training process', Doeringer and Piore see this as being of paramount importance when assessing the development of internal labour markets. Plainly put, on-the-job training:

> "provides either the larger proportion of skills actually utilised in the performance of work or is a pre-requisite for the successful utilisation of formal education" (p.18).

Paraphrasing Doeringer and Piore, they argue that while the identification of the training process itself is made difficult by its informal nature, certain distinguishing features can be noted. First, much training occurs in the production process and is thus closely related to the whole idea of 'trial and error'. Second, instruction, where necessary, tends to be provided on the 'shop floor' either by a supervisor or by fellow workers. Finally, the training process itself tends to "blur the distinction between jobs" (p.19).

Clearly much of the skill specificity talked about earlier is the outcome of on-the-job training. Workers in the primary sector/ internal labour market are encouraged to accept training that will equip them with skills that will restrict them to 'a single job classification'. This is often the result of technological developments which require workers to carry out increasingly specialised tasks. However, it frequently results in workers acquiring skills that are only relevant to their particular firm, thus making inter-firm mobility difficult. This is something firms are aware of and encourage as a means to reducing labour turnover among primary sector employees.

The third factor instrumental in generating internal labour markets is 'custom' at the workplace which Doeringer and Piore define as:

> "an unwritten set of rules based largely upon past practice or precedent ..... which can govern any aspect of the work relationship from discipline to compensation" (p.23).

The importance of customary practice lies in its influence on the rules governing the pricing and allocation of labour within the internal labour market. According to Doeringer and Piore:

> "These rules become constrained and less responsive to market forces, thereby explaining much of the apparent rigidity of internal wage and allocative structures" (p.24).

Clearly then the workings of the internal labour market are a very important part of the dual labour market model. In its extreme form firms operating an internal labour market could recruit workers to the primary sector from the external labour market for very few

low level 'port-of-entry' jobs, positions elsewhere in the organisation being filled entirely from internal recruitment. To find this however is rare, for firms tend to recruit workers from the external labour market to at least two levels of port-of-entry jobs - one at the skilled level and one at the unskilled.

So far however, no attempt has been made to distinguish between the different types of internal labour markets. The scope and structure of internal labour markets are not the same for every plant, firm or occupation and the Doeringer and Piore analysis identifies two such markets: 'enterprise' and 'craft' markets. They also identify a third type of labour market called a 'competitive' market, but here "administrative rules are either absent or so flexible as to argue against the applicability of the ILM concept" (p.5).

In an analysis similar to Doeringer and Piore's, Lutz and Sengenberger (1974) also try to extend the dual labour market model by incorporating Kerr's structured/structureless model and Becker's Human Capital Model into a theory of how the labour market works. They too identify three separate labour submarkets - firm specific, craft and unspecific - and argue that the submarket a worker finds himself attached to depends on the qualifications and the type of training he receives. According to Lutz and Sengenberger, the interests of both workers and firm are best served by 'protecting' their respective investments (craft training in the case of workers, and firm-specific training for firms). Here, for example, both parties may invoke rules and regulations governing movement into and

out of companies, as well as movement within them. When this happens the labour market can be said to have become institutionalised. Similarities with the Doeringer and Piore model however are close enough to allow us to concentrate on their more widely accepted approach without neglecting the ideas contained in Lutz and Sengenberger.

Enterprise markets (10) tend to be vertically structured, characterised by job entries at the lower end of lines of progression, with vacancies in other jobs usually being filled by the promotion of workers from the next lowest job classification in the line. As Loveridge and Mok (1979) remark "the internal market is the firm" (p.63). Here, employee training is firm-specific such that increases in productivity tend to be firm-specific rather than industry-specific (11). By its very nature then, firm-specific training reduces labour mobility between firms, so that mobility really only takes place within the firm. For manual workers the internal labour market tends to be restricted to the plant, while the internal labour market for management extends to the whole company. The internal labour market for other white-collar employees on the other hand is similar to that of clerical workers and technicians in that it resembles that of manual workers, while that for professional workers more closely resembles the managerial case. Trade union influence on allocative and wage structures tends to be relatively passive in such circumstances, with management taking the initiative as regards these factors. Unlike craft internal markets (see below), trade unions in enterprise markets are not organised along occupational lines but along industrial or enterprise ones. As the

firm relies heavily on the external labour market for its initial recruitment of workers to lower job classifications, its 'hiring standards' must be flexible with regards the external market (e.g. whether it is 'tight' or whether a high level of unemployment exists), its competitor's wage rates, the characteristics of the local supply of labour, etc. Once a worker is recruited however, his advancement to successively higher job classifications (12) is very much a function of "relatively fixed standards of seniority and ability", standards that "do not change freely with external economic conditions or even in response to variations in the internal supply and demand for labour" (Doeringer and Piore 1971, p.3) (13). In other words, a firm's recruitment to lower job classifications must allow for some flexibility to take account of factors beyond its control; recruitment to a higher job classification via internal promotions however is very much dependent on the firm's own standards, and will vary from plant to plant.

Craft (or occupational) markets by contrast (14) "tend to centre around the local union and the geographical and occupational jurisdiction of the local union generally defines the boundaries of the market" (Doeringer and Piore 1971, pp.3-4). Examples include carpenters, longshoremen, plasterers, boilermakers, operating engineers, etc. These markets are horizontally structured due to the emphasis placed on general rather than firm-specific training which equips the worker with skills that are industry-specific rather than organisation-specific. Consequently, labour mobility between firms is much greater here than labour mobility between industries or crafts. According to Loveridge and Mok (1979):

"Attachment to the enterprise is thus achieved through attachment to the occupation. Because wages and other material conditions tend to be equalised, workers can quite easily move from firm to firm ..... If a worker wants to be vertically mobile, he must leave this form of structured market in which he is tied to the collective fate of his occupation" (p.63).

Hiring standards in craft markets tend not to be so responsive to prevailing external market conditions as in enterprise markets, even when the labour market is tight. Trade union influence however is much more active in the former than the latter, with entry decisions often coming under union jurisdiction/control rather than management's. Unionisation can be seen to encourage internal craft labour markets in two ways. Inside the firm they protect the interests of their members by way of collective bargaining so that agreements are struck with management regarding wages, conditions of work, recruitment, promotion, redundancies and dismissals. Outside the firm they control entry into certain crafts and occupations via apprenticeships etc. thereby creating their own internal labour markets. One consequence of this is that the rules governing entry into craft or occupational markets tend to be more rigid than those governing entry into the enterprise type of internal market. Those rules governing internal allocation however are often more flexible, emphasising work experience above seniority and ability. This of course presents a marked contrast to the situation prevailing in enterprise markets regarding promotions (15). Moreover, workers in craft type markets are able to attain greater job security by exerting greater control over job entry. Job security under the enterprise system on the other hand is realised through control after

initial allocation, and is thus tied up with seniority, ability and limited ports of entry. All this said however, craft markets often resemble enterprise markets in one important respect: their "pricing and allocating of labour are the subjects of administrative rules, just as they are in enterprise markets" (Doeringer and Piore 1971, p.4). These rules, of course, differ between the two markets, both in content and the way in which they respond to the same economic variables. But this should not detract from the fact that it is these rules that "create the distinction between the internal and external labour force which is so important to the definition of an internal labour market" (Doeringer and Piore 1971, p.4)

Regarding competitive labour markets, Doeringer and Piore believe that in any discussion of internal labour markets "it is useful ..... to have in mind some labour market in which the features of the internal labour market are absent" (p.4). It is their belief that there exist a number of markets which either lack the administrative rules needed to create the necessary distinction between internal and external labour markets, or which are subject to rules so flexible when governing the allocation and pricing of labour that they render the concept of the internal labour market inappropriate. Such markets are characterised by low capital intensity and populated by low-skilled workers who receive little or no training from the firm and in return feel little or no obligation to the firm. According to Doeringer and Piore: "It is with such competitive unstructured markets that the internal labour market should be contrasted" (p.5).

What is clear from the preceding analysis then is that the development of institutional rules which produce enterprise and craft internal labour markets reduce the competition among workers for jobs. Only when labour markets are tight do workers in the competitive/secondary labour markets stand a chance of entering employment in primary internal labour markets. In Doeringer and Piore's words:

> "For some disadvantaged workers, movement between the secondary and the primary sectors may be described as a queue phenomenon comparable to that through which workers enter internal labour markets in the primary sector. When the labour market is loose, many workers in the secondary sector stand at the end of the queue for employment in primary internal labour markets. As the market tightens, primary employers are forced to move down this queue and eventually reach those at the back" (pp.168-9).

Clearly then, restricted labour mobility (both within and between markets) and the presence of an unemployed pool of labour (this idea is very much in keeping with the Marxian idea of the industrial reserve army) has the effect of isolating workers in the internal labour market from competiton with workers in the external market. Because seniority plays such an important part in internal labour markets as a whole, and enterprise markets in particular, inter-firm and inter-industry mobility is restricted by the difficulties many workers face in trying to find another job elsewhere that does not entail reductions in pay or status.

Clearly then, the analysis so far would appear to support the assertion that it is not so much the characteristics of the workers themselves that has given rise to labour market dichotimisation, but the nature of the jobs they hold. The need for

specific skills and on-the-job training for example forces firms to select certain workers (usually white, educated males) for the more skilled occupations while leaving much of the semi-and unskilled work to less able, less reliable employees (usually women and blacks). There is however another important school of thought that believes the explanation for labour market stratification is more historical in nature. It is to this that we now turn.

2.6 Labour Market Duality - An Historical Explanation

Edwards, Reich and Gordon (1975) regard labour market segmentation as the outcome of twentieth century (American) capitalism and the desire of employers to excercise complete control over both the product and factor markets. Their argument goes as follows. Earlier, Reich et al. (1973) had defined labour stratification as:

> "the historical process whereby political-economic forces encourage the division of the labour market into separate sub-markets, or segments distinguished by different labour market characteristics and behavioural rules" (p.359).

At the turn of the century the American economy was in the throes of a transition from:

> "a more of less open, competitive, local-market-orientated laissez-faire, entrepreneurial capitalism to a more or less closed, oligopolistic, national- and international-market-orientated capitalism dominated by giant corporate enterprises" (Edwards et al. 1975, p.xi).

Not only were ownership and production becoming more concentrated and competition more closed, but the product market was also becoming more concentrated. At the same time there was a need for greater

administration and hence many enterprises were forced to become heavily bureaucratised. The coming of mechanisation and factory production also resulted in a dramatic transformation in the aims and ambitions of the capitalist classes. Edwards et al. write:

> "The captains of the new monopoly capitalist era while released from short-run competitive pressures went in search of long-run stability ..... Their new concerns were the creation and exploitation of monopolistic control, rather than the allocational calculus of short-run profit maximisation" (p.xii).

Determined to stamp out anything that threatened this control they looked upon the growing militancy of the working classes, which at the time was being fuelled by the increasing proletarisation, urbanisation and 'factoryisation' of the working masses, as something intended to undermine their authority. Accordingly, many of the larger enterprises devised a strategy of 'divide and conquer' which set about dividing the labour force so that workers no longer shared the same experiences and opposition to their employers.

It is worth mentioning here that smaller firms (those typically depicted as secondary or peripheral) were not faced with this problem to the same extent because workers in this sector were still very much disorganised and disunited. The need for some form of bureaucratic control here therefore was not as great, with many secondary sector employers still accepting some features of employment that were a throw back to a more competitive (pre-monopoly) capitalist era including lateness, absenteeism, high turnover, and general instability.

An essential feature of the Edwards, Reich and Gordon

hypothesis therefore is that labour market segmentation has been caused not so much by the labour market and its peculiarities, but by the need for firms to split the labour market into separate markets so that it corresponds to different forms of labour control systems (16). Recalling Edwards's (1979) division of the labour market into three distinct submarkets (Independent Primary, Subordinate Primary and secondary), he sees the IPM as the outcome of 'bureaucratic control' within the firm while the SPM and secondary markets are seen to be the outcome of 'technical' and 'simple control' respectively. According to Edwards bureaucratic control:

> "pushed the firm specifically towards independent primary employment, with its emphasis on occupational or professional standards, incentives for identifying with the job, importance of schooling and high return for experience" (pp.181-2).

Its origins lay in enterprises where education first played an important part in recruitment and advancement. What was once a peculiarity of a few firms when seeking out new recruits soon became an important hiring criteria in many different types of firm. Workers were to be recruited at certain (limited) ports of entry, and promoted internally.

Technical control on the other hand resulted in a SPM, with Edwards arguing that this market:

> "emerged from a historic compromise - a bargain between core firms and industrial unions that leaves the management of the business in the employer's hands but guarantees to workers primary-market job rights" (p.181).

With union agreement, management allocates workers to jobs on the basis of seniority, which also plays an important role when it comes

to deciding on layoffs and dismissals as well as in wage negotiations.

Simple control by contrast resulted in a secondary labour market. Here, according to Edwards (1979):

> "both the labour process and the accompanying labour market are distinguished by the lack of elaborate structural or institutional features. The essence of simple control, in either its entrepreneurial or hierarchical form, is the arbitary power of foremen and supervisors to direct work, to monitor performance, and to discipline or reward workers. Almost by definition, the absence of a structurally based control system provides little avenue or incentive for worker promotion, so secondary jobs turn into dead ends" (his emphasis, p.183).

Clearly then, one of the most important elements of the capitalist strategy was the creation of internal labour markets. Workers were to be divided essentially into two sectors, primary and secondary. Edwards et al. clearly believe workers confined to the secondary sector are at a considerable disadvantage compared to those in the primary sector when one compares their respective career prospects, patterns of labour mobility, earnings, responsibilities, etc. Not only were employers willing to offer primary sector workers higher wages and greater job security than secondary workers (thereby maintaining their services and reducing their need to form a union), but they were also prepared to establish job ladders within the firm which would help them maintain discipline while offering workers the incentive to work harder in an effort to get promoted. Writing of the experiences of the United States Steel Industry in 1890-1920, Stone (1975) argues it was this system of fostering job ladders that:

> "pitted each worker against all the others in rivalry for

> advancement and undercut any feeling of unity which might develop among them. Instead of acting in concert with other workers, workers had to learn to curry favour with their supervisors, to play by their rules, in order to get ahead" (p.47).

This was particuliarly so in the American Steel Industry, for a series of technological developments made at the turn of the century meant that the number of skilled jobs in the industry were in the minority, while the majority of jobs had become increasingly standardised and the workers in them increasingly homogenised. The development of internal labour markets in the U.S. Steel Industry then was not so much in answer to the problem of training workers for increasingly more skilled tasks ("each rung of the ladder providing the necessary training for the job above it" (Stone 1975, p.49)) because there were so few skilled jobs left at this time; instead they allowed employers to avoid any problems that might arise from the homogenisation of the labour force by dividing the workforce at a number of different points within the firm. As Stone writes, "the minutely graded job ladders that developed were a solution to the 'labour problem', rather than a necessary input for production itself" (p.49). There is little doubt that the experiences of the American Steel Industry, and the way in which it tried to pre-empt any problems that might have arisen in terms of labour disturbances, was copied by most other industries at this time. This is something that Wachtel (1975) is in agreement with for he argues:

> "Homogenisation of the workforce under modern industry has been supplanted by stratification under monopoly capitalism. And, in fact, monopoly capitalism is a phase of capitalism which fosters and facilitates labour stratification" (his emphasis, p.104).

By the early 1920s then, the economy had two distinct and separate sectors existing side by side. First and foremost there was the extremely powerful and highly concentrated oligopolistic corporations where the introduction of bureaucratic (and technical) control and its "institutionalisation of hierarchical power" (Edwards 1975, p.9) became an integral part of the day-to-day running of these kind of firms. Secondly, there was the much smaller, but numerically more significant, competitive firms that survived on the periphery of the first. Here, a simple control hierarchy developed with its emphasis on personal supervision, producing a different set of worker characteristics from the first including greater labour instability. Firms wishing to recruit workers with similar traits and characteristics to those in the primary sector were unlikely to look to the secondary sector for recruits. Hence, these almost insurmountable barriers to labour mobility across sectors owe their orgins to some historical separation of markets that Edwards, Reich, Gordon and others trace to the period 1890-1920. They believe it was the dualistic industrial structure that developed at this time that brought about the labour market dualism that exists today.

2.7 Conclusions

The models we have just looked at reflect the complexity of the labour market. Many of the later models have attempted to overcome the perceived weaknesses of earlier ones. Thus we see, for example, Doeringer and Piore's (1971) model providing a framework for the analysis of labour movement within and between firms. Yet, while their approach undoubtedly provides us with a valuable starting

point, it too contains a number of weaknesses that prevent us from adopting it in its entirity. For example Doeringer and Piore seem to equate primary workers with internal labour markets, and secondary workers with casual unstructured work opportunities. They also treat the primary labour market as though it were synonymous with the well organised sector of the economy. However, as we shall see in our study of Company E in Chapter 8, some companies in the well organised sector make extensive use of secondary workers who are, almost exclusively, excluded from the internal labour markets in these companies. Doeringer and Piore also contrast medium/large size enterprises (structured/organised ones) with low wage marginal enterprises where workers with employment disadvantages tend to find work. These latter organisations (shops, and major parts of hotel and catering for example) will almost certainly be employing secondary workers; but secondary workers will also be important in medium/large size enterprises. Moreover, it would be foolhardy to depict <u>all</u> secondary workers as unstable for there are a number of secondary workers who are just as stable as workers in the primary sector. We shall see in the next chapter for example that figures comparing job tenure rates for different occupations show only a small portion of the secondary workforce exhibiting the high rates of instability normally associated with secondary employment.

Regarding this last point then, Mok's (1975) classification is particularly useful here because it recognises that some secondary workers form a stable part of the workforce (the SI sector), while others operate in the unstable secondary external (SE) sector. Equally, primary sector employees, who will all have access

to the internal labour market, will differ in terms of their loyalty to the company. Some workers (craftsmen, engineers, technicians, accountants and managers for example) will find themselves in a fairly competitive situation and can move easily between companies (here then we see elements of Doeringer and Piore's craft market and Piore and Edward's Independent Primary Market (IPM)). Other primary sector workers however, especially those with firm-specific skills, will find it more difficult to undertake inter-firm mobility and are more likely to remain loyal to one firm.

Later, in Chapters 8, 9, 10 and 11, we shall undertake a detailed study of labour mobility in three separate companies which will highlight the relative importance internal and external labour markets play in filling vacancies within them. Here for example, we shall be able to judge their degree of openness regarding internal labour markets (how many ports of entry there are, etc.). We shall also be able to see whether or not internal movements in each firm are based on a hierarchy involving movements up an occupational ladder, or based more on lateral mobility where movements tend to involve changes in jobs/departments but not occupation. Our company studies will also concentrate on turnover and length of service, which should shed some light on the extent to which workers are tied and/or committed to their organisation.

2.8 Footnotes

(1) As well as expressing their dissatisfaction with the (neo) classical model of the market, many economists were also becoming increasingly dissatisfied with the failure of the Human Capital model to explain wage variations for given levels of human capital (the model only allows for wage rate variations in response to differences in human capital endowment among individuals). They also found little support for the idea put forward by proponents of the model that as unskilled and semi-skilled workers were equipped with greater skills (whether via more training, greater education, or both), their incomes would increase accordingly, just as it does for skilled and professional workers.

(2) According to Loveridge and Mok (1979) "the secondary sector is marked by pervasive under-employment because workers who could be trained for skilled jobs at no more than the usual costs are confined to unskilled jobs". They continue: "In this sense emphasis should be placed on 'good' versus 'bad' jobs rather than 'skilled' versus 'unskilled' workers" (p.47).

(3) The term 'dualism' can still be applied here because all these models have as a common theme the primary-secondary division in the labour market. Only their identification of further divisions within one or both of these segments sets them apart from the earlier models of dual labour market theory. Piore (1980) for example regards the term 'dualism' useful only as a descriptive term, refering to the primary-secondary division as "a kind of minimalist notion" (p.17). In other words, it is not so much the number of different segments that is important but the fact that there exists "a radical discontinuity between segments" (Michon (1981), p.93).

(4) Examples here include durable manufacturing and construction, industries that generate high levels of productivity, pay high wages, accrue large profits and are often subject to strong unionisation.

(5) Examples here include non-durable manufacturing, agriculture, the retail trade and sub-professional services, industries that tend to be made up of small firms that generate small profits, are not highly productive, are often subject to intensive product market competition, have low rates of unionisation and pay low wages.

(6) The Doeringer and Piore concept of an internal labour market is one closely related to dual labour market theory for they write of their book: "The primary sector consists of a series of internal markets of the kind upon which the analysis of the present volume focuses" (Doeringer and Piore 1971, p.167).

(7) There are some authors who disagree with the emphasis Doeringer and Piore place on skill in the context of the internal labour

market. For example, Blackburn and Mann (1979) in a study of mainly unskilled male manual workers in nine Peterborough firms in 1969-72 found that many of the attributes required for skilled jobs were "not great" and could quite easily be carried out by most workers. They remark: "The internal labour market is fundamentally an apprenticeship in co-operation. Demonstrate discipline on routine jobs, and you may be rewarded! The essential point about jobs at the top of the hierarchy is not an unusual degree of skill, but the costliness to management of error and the likelihood of error being made" (their emphasis, p.108).

(8) Doeringer and Piore do recognise that horizontal/lateral movements do take place within firms, but much of their analysis is, at least implicitly, conducted in terms of occupational/ vertical movement.

(9) It is recognised that todays economic climate might have altered the situation insofar as the hiring, promotion and layoff rules which create the distinction between internal and external labour markets may well have been superceded by less formal rules tailored to the survival of the firm.

(10) Alternatively called manorial markets by Kerr (1954) and Alexander (1974).

(11) Of paramount importance here is the role technology plays, for it is often claimed that technology is one of the main reasons why training has to be firm-specific. If this is so, and very few people disagree with this, then Piore's assertion that plants "mould men to jobs, not jobs to men" is an accurate one (Piore 1968a, p.619).

(12) Strictly speaking we should be talking in terms of movement mainly within a group of jobs.

(13) The relative weights given to seniority and ability will, of course, vary from firm to firm, time to time, etc.

(14) Kerr (1954) and Alexander (1974) term these guild markets.

(15) Here, although ability and seniority are both important, the importance they assume varies according to whether a worker is to be promoted or laid off. In promoting a worker, emphasis is often placed on ability closely followed by seniority. When making workers redundant the determining criteria is often seniority.

(16) Edwards (1979) believes that the type of control system operating in a particular labour market gives us another way of separating/defining labour market segments.

Chapter 3 Empirical Studies and the Dual Labour Market

Having considered in some detail the various theories relating to labour market segmentation, we now come to examine the findings of a number of empirical studies into this particular aspect of labour market behaviour. To this end, we shall look at these studies under four headings, each of which is likely to provide evidence of the different ways in which labour market segmentation can take place (1), namely:

(1) Differences in job tenure, labour mobility and labour turnover rates between different groups of workers.

(2) Sex discrimination and occupational segregation.

(3) The existence and importance of internal labour markets in firms.

(4) Relative earnings and/or occupational mobility.

3.1 Job Tenure and Labour Turnover

One test for labour market dualism is to see if there are any significant differences in job tenure and turnover rates among different groups of workers. In Bosanquet and Doeringer's (1973) words:

> "If enterprise specific training is a measure of the human capital of advantaged workers but not of disadvantaged workers, then this should also be reflected in different rates of turnover and job tenure between the two groups" (p.430).

The term 'advantaged workers' here refers to workers attached to the primary labour market, while the term 'disadvantaged workers' refers to those workers found in the secondary market.

Table 3.1 presents a broad occupational breakdown of male workers lengths of service with their current employer for 1968. A total of 41.8% of all males have less than 5 years' service, with this percentage being highest for unskilled manual workers (61.4%) and lowest for foremen and supervisors (21.1%). There is clear evidence from the company studies in Chapters 8 to 11 that the position of foreman is achieved by internal promotion and this is partially confirmed by Table 3.1 (only 9% in this occupation have less than two years' service).

The evidence for females, see Table 3.2, is that labour stability is considerably lower than for males. Office and communication workers account for over half of the sample and almost two thirds of females in this occupation have less than 5 years' service. Forewomen and female supervisors are the most stable group while the least stable were technical and scientific staff. However, both these groups were comparatively unimportant occupations for females.

Now, while it is recognised that the listing of lengths of service for broad occupational groupings may well hide important variations within each category, we do nevertheless feel that the two tables emphasise the important role short lengths of service have to play in determining quit rates in the manufacturing sector. Furthermore, although job tenure tends to be longer in some occupations than others, those jobs where average job tenure lengths are relatively short may still contain a substantial minority of workers with long lengths of service (say, 15 years or more). For

Table 3.1 Full-Time Males: Length of Service With Current Employer, by Occupation, September 1968

Occupation	Length of Service (Years) Under 1	1	2	3–4	1–4	5–9	10–14	15–19	20+	% of Tot.
A + M	8.3	5.9	6.4	10.3	30.9	16.3	12.1	9.8	31.0	9.1
O + C	9.8	7.2	6.4	10.9	34.3	20.3	12.1	9.7	23.6	11.5
T + S	11.2	9.4	8.1	13.1	41.8	19.9	11.8	9.6	16.9	9.7
All N-M	9.8	7.5	7.0	11.4	35.7	18.9	12.0	9.7	23.6	30.3
F + S	4.7	4.3	4.2	7.9	21.1	15.6	13.9	13.8	35.6	5.8
SK	13.9	7.8	7.5	10.9	40.1	20.1	12.8	9.1	17.9	33.1
SSK	15.9	9.5	8.4	13.8	47.6	18.8	12.0	8.5	13.1	16.5
UNSK	27.5	11.0	9.8	13.1	61.4	15.4	8.5	5.9	8.9	14.3
All Man	16.4	8.6	7.9	11.8	44.7	18.4	11.8	8.7	16.4	69.7
Total	14.4	8.2	7.6	11.6	41.8	18.6	11.9	9.0	18.6	100.0

Key: A + M Administrative and Management
O + C Office and Communication
T + S Technical and Scientific
F + S Foremen and Supervisors
SK Skilled
SSK Semi-Skilled
UNSK Unskilled
N-M Non-Manual
Man Manual
Tot Total

N.B. The above table was derived from the New Earnings Survey, 1968, Table 94. Not every occupational category from this table was included in Table 3.1. Only those categories coinciding with the categories in our cross-sectional study (Chapter 7) were chosen. Furthermore, the 'sample size' in each occupational category differs in Table 3.1 from those listed in the New Earnings Survey. This is because we have excluded from the sample workers for whom no length of service was recorded. Finally, all workers classified as manual in Table 3.1 were listed as "other workers" in the 1968 table.

Table 3.2 Full-Time Women: Length of Service With Current Employer, by Occupation, September 1968

Occupation	Length of Service (Years)									
	Under 1	1	2	3-4	1-4	5-9	10-14	15-19	20+	% of Tot.
A + M	10.1	12.1	8.8	11.4	42.4	13.1	10.1	8.8	25.6	2.4
O + C	20.9	14.2	13.4	16.1	64.6	16.9	7.0	4.0	7.6	53.4
T + S	19.1	20.1	14.3	17.3	70.8	14.6	6.7	3.0	4.9	2.7
All N-M	20.4	14.4	13.2	15.9	63.9	16.6	7.1	4.2	8.2	58.5
F + S	8.5	3.2	6.9	8.0	26.6	18.1	22.9	10.1	22.3	1.5
SK	14.1	10.8	10.4	19.5	54.8	23.2	9.1	4.7	8.2	10.4
SSK	22.4	12.4	10.5	17.9	63.2	18.5	7.9	4.7	5.6	17.1
UNSK	29.0	13.9	9.4	15.9	68.2	17.0	6.5	3.5	4.8	12.5
All Man	21.8	12.1	10.0	17.4	61.3	19.2	8.3	4.5	6.6	41.5
Total	21.0	13.4	11.9	16.5	62.8	17.7	7.6	4.3	7.5	100.0

Key: See Table 3.1.

N.B. All the comments regarding Table 3.1 apply here.

Source: New Earnings Survey, 1968, Table 95.

example, 14.8% of unskilled male workers have been with their current employer at least 15 years, representing a sizeable minority of workers with long job tenure in an occupational category often depicted as unstable. Equally, almost one fifth of female workers have ten or more years' service with their current employer. It would seem from our findings that, when looking at figures for job tenure at least, the notion of employment instability in many jobs typically described as secondary sector occupations is unfounded. For while

turnover rates may be higher in the supposedly secondary occupations than they are in the primary, the difference between them is not that great. It might be concluded from this then that barriers to upward mobility (an important tenet of the dualist philosophy) might not be so much a function of secondary worker instability, but more a function of the role secondary workers have to play in the labour market. For few economists doubt that, in times of labour market pressure, the primary sector often calls upon the secondary labour market if the need arises, only to shed workers from this 'industrial reserve' when the market slackens.

This is something Wachter (1974) fails to fully appreciate when he argues that the expansion in the American economy in the late 1960s forced firms to go beyond sub-contracting work out to the secondary sector to actually recruiting secondary sector workers to fill primary sector jobs. He sees the macro-study by Okun (1973) as providing evidence of the large amount of upgrading that took place at this time. This, Wachter believes, proves that "the unemployment barriers were ..... significantly pierced" (p.659). On the basis of this he argues that "workers can be integrated into primary jobs only with some difficulty in the form of more, or costlier, training" (p.659).

Yet, as we have already seen in Chapter 2.5, dual labour market theorists do not speak in terms of absolute barriers to labour mobility; the dual model only stresses the relative barriers between the two sectors. For some disadvantaged workers the movement between the secondary and primary sectors has been likened to a queue

phenomenon similar to that through which workers enter the internal labour markets in the primary sector. In this respect then, to quote Hall (1974):

> "Wachter takes too seriously the dualist's stereotype of good jobs filled entirely from the internal labour market" (p.689).

What this suggests therefore is that while some mobility between the primary and secondary sector does take place, the barrier preventing secondary workers from gaining permanent primary sector employment may well be the lack of primary sector jobs, not secondary market instability. Faced with a situation where the number of workers seeking primary sector employment exceeds the number of primary sector jobs, employers can easily discriminate against workers on the grounds of sex, race, education, perceived risks of instability and high turnover, etc., without affecting the supply of workers to the primary sector.

Rosenberg (1977) set out to disprove the dualist notion that workers in the secondary labour market endure much shorter lengths of job tenure than primary workers. He collected data for white, black and Spanish-speaking workers in four United States cities (Brooklyn, Cleveland, Detroit and San Francisco) to show the mean number of years with a current employer. He found that although job tenure lengths tend to be longer in the primary sector, the average job tenure of secondary workers was by no means small, averaging some 80% of those recorded in the primary sector. As a result of his findings he concluded:

"only a small part of the secondary labour force exhibits the instability associated with secondary work while other workers in the same occupations do not .... A secondary worker may work at one job for most of his working life even though the job may encourage instability. Given barriers to occupational advancement, he may see no reason to quit. A worker in a primary market job may quit his job quite often in search of upward mobility. Thus, some primary workers may show short job tenure in comparison to some secondary workers. In addition, involuntary turnover is faced by both primary and secondary workers" (pp.222-3).

Turning to sex differences in labour turnover women are often seen as displaying higher rates than men (see Chapter 6 for a detailed discussion of this). A study by Harris (1966) of just how much labour turnover does vary between the sexes produces mixed results however. Her findings regarding a number of broad occupational groups for the period 1953-63 are summarised in Tables 3.3 and 3.4 below.

Taking male turnover rates first, it would appear from Table 3.3 that job turnover is greater among unskilled workers. While the average number of jobs for unskilled males over the 10 year period exceeds three, the average for males in professional and intermediate occupations is 2 and 1.7 respectively. Moreover, while 15% of unskilled workers held 6 jobs or more, no more than 9% of any other category changed jobs so frequently over the same period, the proportion falling to 3% for male workers in professional and intermediate occupations. We also see that while only 38% of unskilled men maintained the same job throughout, this proportion was over one half for non-manual III and skilled manual workers.

The situation regarding females (see Table 3.4) however is not so clear-cut, there being little difference between the average

Table 3.3: Number of Jobs (†) in the Last 10 Years Held by Men and Analysed by the Occupational Status (††) of their Present Job, or Last Job if not in the Labour Force at the Time of Interview

Number of Jobs	OCCUPATIONAL STATUS							
	Prof	Interm	N-M III	Skilled Man	N-M IV	Part Sk Man	Unsk	All
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1	55	66	51	55	43	47	38	53.0
2	17	19	21	15	24	19	21	17.8
3	14	6	14	11	14	13	12	11.3
4	7	4	6	7	7	8	9	6.6
5	4	2	3	4	6	4	5	3.9
6-9	3	3	4	6	4	7	11	5.6
>9	*	*	1	2	2	2	4	1.8
No. on which % based	263	1181	1081	3450	238	1596	705	8514
Av. No. of jobs per person	2.03	1.68	2.12	2.34	2.47	2.50	3.05	2.30

† Defines the 'number of different jobs' in terms of the 'number of changes of employers'.

†† The following occupational coding was used:
1 Professional, etc., occupations.
2 Intermediate occupations (most managers, executives, minor professionals such as school-teachers, nurses, etc.)
3.1 Non-manual workers in R.G. Social Class III.
3.2 Skilled manual workers.
4.1 Non-manual workers in R.G. Social Class IV.
4.2 Partly-skilled manual workers.
5 Unskilled occupations.

* Less than 0.5% ; R.G. Registrar General.

Source: A.I.Harris (1966), p.58, Table 58.

Table 3.4: Number of Jobs (+) in the Last 10 Years Held by Women and Analysed by the Occupational Status (++) of their Present Job, or Last Job if not in the Labour Force at the Time of Interview

OCCUPATIONAL STATUS

Number of Jobs	Prof	Interm	N-M III	Skilled Man	N-M IV	Part Sk Man	Unsk	All
	No.	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1	(16)	57	46	51	48	44	49	48.0
2	(11)	20	24	24	24	23	24	23.5
3	(3)	10	14	12	12	14	13	13.1
4	(1)	7	7	7	7	8	6	6.9
5	(1)	3	4	3	3	5	3	3.7
6-9	-	3	4	2	5	5	4	4.1
>9	-	*	1	1	1	1	1	0.7
No. on which % based	32	737	2260	737	819	1345	571	6501
Av. No. of jobs per person	1.75	1.92	2.19	2.01	2.20	2.35	2.11	2.16

+ and ++ - see Table 3.3.

* Less than 0.5%.

Source: A.I.Harris (1966), p.58, Table 58.

number of jobs per person in each occupation. Here for example, while 49% of unskilled women were still with the same employer in 1963, only slightly more skilled women (51%) maintained the same degree of employment stability. Females predominate among non-manual workers

in Social Class III and partly skilled manual workers. For these two occupations, there is no significant difference in the average number of jobs between males and females.

It is clear from Harris's study then that the distinction made between primary and secondary workers is too simple. While primary workers are often depicted as being stable employees and workers in the secondary sector unstable Harris's findings point to a certain degree of instability in both groups. For example, we see from Table 3.3 that a fairly sizeable minority of professional male workers have had 4 or more jobs in the last 10 years (14%), while the comparable figure for skilled male workers rises to 19%. In fact, almost the same proportion of skilled female workers (13%) had 4 or more jobs during the last 10 years as unskilled females (14%). What is needed therefore is some theoretical framework that encompasses these characteristics - i.e. one that allows for frequent job changes within the primary sector as well as some labour stability among secondary workers. Mok's (1975) multi-segmented model of the labour market goes some way to providing this.

It should be pointed out however that any comparisons between male and female turnover rates using Harris's findings are made difficult by the way in which her data was collated. For while the data presented in her survey does appear to show that females are as stable in employment as males, it is possible that many of the females listed as having <u>one</u> job during the period only had that job for a short period, giving it up after a while (to get married, have children, etc.) and failing to return to the labour market

thereafter. Thus the results do not prove that females stay in their jobs as long as men. That said however, the study does give some indication of how turnover can vary between occupations. This should provide us with some useful comparisons when we come to analyse the labour situation in our three firms.

3.2 Sex Discrimination and Occupational Segregation

It is well documented that women tend to receive lower earnings than men. There is some dispute however as to its explanation. Is it the result of wage discrimination itself so that employers, for any given occupation, pay males and females of equal experience, education and age, different wage rates? Or is it the outcome of some other influence such as occupational segregation, where females are disproportionately concentrated in low paying jobs and denied access to more highly paid work by employers 'reserving' such employment for male workers? Economists in the past have noted that a lot of low wage employment - and thus a lot of female employment - is concentrated in industries with (a) low skill requirements, (b) low capital intensity, (c) highly competitive product markets, and (d) poor working conditions and little or no chance of advancement. Yet, while not disagreeing with their observations, for there is little doubt that both sex and occupational discrimination do exist, account should be taken of the difficulties involved in trying to accurately identify and measure such discrimination. For example, while we are bound to find that, ceteris paribus, skilled workers earn more than unskilled workers, it is extremely difficult to find figures showing the precise extent of

wage discrimination between, say, skilled men and skilled women in the same occupation. One could easily present results showing female earnings are lower than male earnings (e.g. the Coventry Engineers Employers Federation (1971, p.61, Table 15) found female earnings were between half and two thirds of those achieved by males in a number of manufacturing industries), but these figures are inevitable because females are disproportionately represented in the lower skill categories.

The correct procedure to examine income differentials between men and women is by holding factors such as occupation, marital status, age, education, etc., constant. One such American study is that of Fuchs (1971). Using the One-in-One-Thousand sample in the 1960 census of Population and Housing (2), Fuchs measured the effect of sex on earnings by regressing the hourly earnings differential between men and women across 46 industries against a number of factors including age, marital status, education, city size, social class and the distance between a worker's home and his place of work. He found that females earned, on average, only 60% of the male wage. Fuchs concluded that:

> "given the present occupational structure, it is implausible to attribute a 40 per-cent differential to inherent differences in physical or mental ability ..... In my opinion, most of the 40 percentage points can be explained by the different <u>roles</u> assigned to men and women" (his emphasis, p.14).

In an earlier study, Oppenheimer (1968) also found females to be discriminated against when it came to occupational segregation and pay. Selecting six occupational categories to test for the concentration of females in particular occupations (namely

professional and technical, clerical, sales, operatives, private households, and other services) she believed wage discrimination resulted more from occupational segregation than wage discrimination itself. Using U.S. Census of Population data for both 1900 and 1960 she showed that more than half the female workforce in America could be found in detailed occupational categories in which women made up 70% or more of the total employment. Commenting on this some years later, Blau (1975) argued that Census data tended to underestimate the extent of inter-occupational segregation which, in her view, was even greater than Oppenheimer supposed. What is more, Blau also noted that:

> "the value of the index of segregation as computed in each census year between 1900 and 1960 had varied over a small range, 65.6 to 69.0, and had exhibited no secular trend toward a reduction in segregation" (p.261).

Oppenheimer (1968) also found females were discriminated against in terms of pay and argued that many employers looked upon women as a cheap form of labour. She found 42% of all women workers (71% of all professional and technical women and 98% of clerical females) in occupations where they had above average educational qualifications but below average pay.

McNally (1968) also reports the findings of a survey carried out by the U.S. Bureau of Labour Statistics on occupational earnings in 84 metropolitan areas between July 1965 and June 1966. This study showed that while average earnings for males did not vary according to the proportion of females employed in an establishment, the average earnings for females was very much dependent on the

relative proportions of males and females employed in the same job. Females employed in occupations with a high proportion of males received, on average, higher relative incomes than females employed in occupations with a high proportion of women. An important conclusion from this finding therefore seems to be that wage discrimination is less in occupations where women have made relatively little impact.

The findings of Oppenheimer and McNally can be seen to be backed by those of Zellner (1972) who found full-time women in the U.S. only earned 58% of the male income in 1968. After examining the distribution of jobs among the sexes and finding a great deal of occupational segregation, she proposed that:

> "it is discrimination against women in 'masculine' (male-dominated) occupations that plays the central role in explaining .... occupational segregation and low relative wage" (Zellner 1972, p.157).

Like Fuchs before her, Zellner's findings provide further evidence that a large number of female workers seem to operate in a different labour market to males.

Continuing on this theme, Weisskoff (1972), in a more historical account of occupational segregation by sex, found that despite the increase in the number of jobs open to women since the early 1900s, about half the female labour force in America was still concentrated in only 21 (out of nearly 300) occupational categories, with a quarter being employed in just 5 of these. Compare this with the male situation where 50% of male workers could be found in 65 different occupational categories. She also argued that occupational

segregation may well inhibit female participation in the labour force, as well as dichotomise the labour market in which they are located. In her words:

> "The concentration of women in predominantly female jobs and the likelihood that even within relatively integrated occupations women and men tend to work in different industries or establishments results in a virtual 'dual labour market' for female and male labour" (p.165).

It was also her belief that the concentration of women in a relatively small number of occupations tended to depress female earnings relative to males. This, she believed, forces us to replace the notion that "women earn less because they are in low paying occupations" with one saying "women earn less because they are in women's jobs" (her emphasis, p.165).

For Weisskoff then, it is occupational discrimination against women that is important in explaining their relatively low income status, not wage discrimination. Chiplin and Sloane (1976a,b) too found that much of the difference between male and female earnings could be explained in terms of women being confined to low pay sectors rather than women receiving a lower return than men for any given occupation. Their work is backed up by Metcalf (1981) who, while not denying that wage discrimination exists in some sectors, argued that in the majority of cases occupational discrimination was to blame for women's lowly position in the labour force.

Stevenson (1975) was also concerned to establish that occupational segregation discriminated against women. She set out to test the following three hypotheses. First, whether females, for

any given level of education, did predominate in low status occupations. Secondly, whether there was any validity in the claim that female wages were lower than male ones because women tended to be concentrated in a relatively small number of occupations in comparison to men. The argument here was that wages in occupations with relatively few females tend to be higher than in occupations where there is greater male-female competition for jobs (the so-called 'crowding hypothesis' (see McNally 1968)). Finally, her third hypothesis concerned testing not only for occupational segregation, but industrial segregation as well.

Regarding her first two hypotheses, Stevenson found evidence to suggest that women were subject to occupational segregation so that:

> "even when comparing occupations that are, at least theoretically inter-changeable, women do not seem to have the same kind of access to all occupations that men do" (p.250).

Testing her third hypotheses she also found definite evidence of industrial segregation between the sexes. Commenting on this she concluded that:

> "The labour market assigns women to those industries which are not capable of paying higher wages because of the economic environment in which they operate" (p.250).

Arguing along similar lines Blau (1975) set out to determine the extent to which segregation occured among workers in the same occupation believing that:

> "if segregation occurs even when male and female labour are close substitutes (i.e. capable of performing the same work),

it suggests that powerful forces are operating in the labour market which tend to produce segregation" (pp.257-8).

Blau confirmed that inter-occupational segregation (differences in the distribution of males and females between occupations) was rife, and argued that it was this that formed "the backdrop against which segregation within occupations by establishment takes place" (p.261). Her findings, based on a study of the occupational segregation of workers in clerical occupations in three Northeastern American cities (Boston, New York and Philadelphia) show that:

"even when men and women have similar skills and abilities as evinced by their participation in the same narrowly defined occupational categories, they are segregated by establishment of employment" (p.274).

More recently Buchele (1981) using American data from the National Longitudinal Surveys of young men and women and restricting his sample to public and private employees who had worked full-time (35 hours or more) for at least half of 1975, finds that for any given level of human capital, women earn a lot less than men in the 5 job classes he identifies, namely (a) professional and managerial, (b) semi-professional and technical, (c) subordinate white-collar, (d) primary blue-collar, and (e) secondary jobs. He is careful to point out however the extent to which discrimination varies between the various job classes. Emphasising that "<u>sex is a crucial determinant of job class</u>" (his emphasis, p.216), he goes on to argue that:

"If women were employed in the same proportion as men are in each job class it would not improve the earnings ratio because they are not paid significantly more in the job classes from which they are excluded than they are in those job classes from

which they are concentrated. In contrast to men - for whom job class appears to be an important determinant of earnings - women's earnings are not much affected by their job-class relation. The inescapable conclusion is that, while job segregation is pervasive, it does not directly explain why women earn less than men do" (p.223).

Buchele's conclusions differ markedly from those of Weisskoff. While Buchele believes that sex discrimination is important in determining job class he does not believe that the removal of such discrimination would improve the male-female earnings ratio. Weisskoff on the other hand believes that women concentrated in occupations where females make up a large proportion of the working population will earn less than their male counterparts and that this is a direct result of sex discrimination.

Despite their differences however, both Buchele and Weisskoff are agreed on one important point - that employers do discriminate against female employees. However, while Weisskoff believes such discrimination results in a "virtual 'dual labour market' for female and male labour" (p.165), Buchele is more cautious. He estimates separate earnings functions for the two sexes by regressing earnings on a number of variables including the extent of educational attainment, work experience, job tenure and job location. Buchele could find no real explanation for sex differences in earnings and offered the following observations:

"While women are not as highly rewarded for their skills as men are, the difference between the coefficients in their respective earnings' functions does not account for much of the difference in their earnings. In both the pooled and the within-class equations (3) most of the earnings' gap between men and women is contained in the constant term. Thus, neither the orthodox nor the labour market segmentation theory really explains the male-female earnings gap. Women are paid much less

than men, but none of the variables and parameters that these theories point to really explain why" (p.223).

Another test that can be used to examine the extent of discrimination against women is to compare their upward occupational mobility with that of males. This is something Harris (1966) does in a study of labour mobility in Great Britain for the period 1953-63. While examining changes between occupational categories for both men (Table 3.5) and women (Table 3.6) over the ten year period she found that, with the exception of partly-skilled manual workers, upward occupational mobility among women was less extensive for females than males.

Taking the non-manual Social Class IV category for example, we see that only 61% of men maintained the same occupational status over the 10 year period, while 68% of females did so. Contrasting the differences in the new occupational status attained by those moving to new jobs during this period we see that relatively few women experienced any upward mobility. Only 7% entered skilled jobs (compare 10% male), 5% non-manual Class III occupations (compare 8% male) and 3% minor managerial and professional jobs (compare 5% male). Turning to the non-manual Social Class III category we see an interesting picture emerge. While only 6% of females experienced upward mobility (12% of males), a smaller proportion of females underwent downward mobility (9% of females compared with 12% of males). It is also interesting to note that in the semi-skilled category 26% of females move 'upwards' compared with 24% of males. On the whole however the evidence presented in Table 3.6 seems to suggest that females do experience less upward mobility than males

Table 3.5 Occupational Status of Men who are Working Both 10 Years Before and at Time of Interview

Occupational Status 10 years ago		Occupational Status Now 1 %	2 %	3.1 %	3.2 %	4.1 %	4.2 %	5 %	No. on which % based
1	Prof + admin	94	2	3	–	–	1	–	124
2	Man exec, Minor prof	*	86	7	3	*	3	*	562
3.1	Non-manual RG Class III	2	10	76	5	2	4	1	474
3.2	Skilled manual	1	4	4	78	1	9	3	1920
4.1	Non-manual RG Class IV	–	5	8	10	61	11	5	77
4.2	Partly-skilled manual	*	4	3	14	3	70	6	683
5	Unskilled	–	1	1	10	3	17	68	222

* Less than 0.5%

Source: A.I.Harris (1966), p.51, Table 52.

Table 3.6 Occupational Status of Women who were Working Both 10 Years Before and at Time of Interview

Occupational Status 10 years ago		Occupational Status Now 1 %	2 %	3.1 %	3.2 %	4.1 %	4.2 %	5 %	No. on which % based
1	Prof + admin	80	20	–	–	–	–	–	5
2	Man exec, Minor prof	*	86	7	2	3	2	*	193
3.1	Non-manual RG Class III	–	6	84	2	3	3	1	401
3.2	Skilled manual	–	2	7	65	8	11	7	186
4.1	Non-manual RG Class IV	–	3	5	7	68	7	10	166
4.2	Partly skilled manual	–	2	7	9	8	66	8	268
5	Unskilled	–	–	5	5	12	8	70	85

* Less than 0.5%

Source: A.I.Harris (1966), p.51, Table 52.

and slightly greater downward mobility.

It would seem therefore that the main problem facing disadvantaged groups in the labour market is occupational segregation rather than wage discrimination. Female workers for example tend to be confined to occupations that are predominantly female in composition. We can confirm this by comparing the relative proportions of men and women who manage to move out of 'female dominated occuaptions'. We see from Tables 3.5 and 3.6 that females predominate in three occupations: non-manual in R.G. Class III (3.1), non-manual in R.G. Class IV (4.1), and partly-skilled manual (4.2). Nearly two-thirds (64%) of all female workers can be found in these three occupations compared with just under one third (30.4%) of males. The proportion of women staying in these occupations over the 10 years is 85.1%, while the proportion making some occupational change is 25.0%. This means that 14.9% women move to 'non-female dominated' employment, and 10.1% move between the three occupations themselves. By contrast 28.3% of male workers in these three occupations change jobs, 6.9% going to other female dominated occupations, and 21.4% moving to non-female dominated occupations. It is clear that female workers fail to move out of female dominated occupations as frequently as males, and it is this that explains their inferior position in the labour market. Hence, it comes as little surprise to to find women displaying higher rates of turnover than men and failing to earn promotion as often as their male colleagues. This is something we shall consider in greater detail when we undertake an analysis of quit rates in the British manufacturing industry (Chapters 5 and 7) and when we analyse the

manpower situation in three different companies (Chapters 8-11).

Finally, it is worth drawing attention to the overall level of occupational mobility as shown in Tables 3.5 and 3.6. The weighted average for the proportion of males who changed their occupational status over the ten year period was 23%, while the corresponding figure for females was 25%. Occupational mobility is another factor which is considered in the three company case studies.

3.3 The Existence of Internal Labour Markets in Firms

The concept of the internal labour market has emerged as crucial in explaining labour market duality. However, the number of surveys investigating this particular aspect of labour market theory in British firms is small, forcing Jain and Sloane (1980) to comment: "In comparison with the United States little empirical work has been undertaken in Britain on the operation of the internal labour market" (p.97). Nevertheless, some findings have been reported and it is to these that we now turn.

One of the first studies which appears to report the extent of internal labour market mobility in Britain was Harris's (1966). In her 1953-63 survey of labour mobility she examined changes in the occupational status of men and women in each job, this being defined as working with the same employer. Taking males and females separately she found that 1.9% of men and 0.8% of females attained a higher occupational status, while 0.5% of men and 0.2% of women underwent downward occupational mobility. Breaking these figures down to reflect how occupational mobility may vary according to original

status, she found that the groups showing most change were:

> "those covering unskilled men, 2.6% of whom rise to do skilled manual, and 1.8% partly-skilled manual work, and the non-manual skilled men, 2.4% of whom rise to the managerial or minor professional status" (p.53).

Such changes over ten years suggest that the internal labour market is comparatively unimportant. However, we note from Tables 3.3 and 3.4 that the average number of jobs per person over the ten years was in excess of two, and all these jobs have been considered in this analysis. Her results tell us that, in general, people leave their employer with the same occupational status as when they started. They do not tell us how many positions within an organisation are filled by internal promotion. Such an exercise can only be undertaken by studying a company over a period of time.

One such study is that by MacKay et al. (1971) who considered male manual workers in engineering firms in five separate labour markets (Birmingham, Glasgow, North Lanarkshire, New Town and Small Town) between 1959 and 1966. They found considerable variation in the degree of openness of internal labour markets. In some engineering firms workers could be recruited at any occupational or skill level, while others limited entry to just one level. MacKay et al. make the point that the importance of internal labour markets is related to the state of the local labour market. Where this was 'tight', greater emphasis tended to be placed on internal recruitment. Where it was 'loose' internal mobility was restricted. They also found that internal mobility among skilled workers was below that of other groups. In all but one location (Small Town)

between 2.6% and 5.4% of skilled workers underwent internal occupational mobility during the seven years. This compares with a much higher percentage of semi-skilled workers (between 4.5% and 14.8%). Unskilled workers too displayed high rates of internal mobility during this period with between 56.4% and 64.3% using the internal market to change occupations in three of the cities (North Lanarkshire, New Town and Small Town). Finally, internal occupational mobility among non-production workers was also high - between 14.6 and 26.2% in 4 of the labour markets, and just over half in the fifth (Small Town) (4). According to MacKay et al:

> "The evidence therefore confirms Palmer et al's view that 'skilled men are more strongly attached to their occupation than are semi-skilled men' (5). In the internal market as in the external market skilled men are unlikely to move downwards in the occupational hierarchy, and their opportunities for upward movement to non-manual jobs are fairly limited. Conversely, there are greater opportunities for promotion for manual workers with a lesser degree of skill, if only because they <u>can</u> move up the occupational ladder within manual work" (their emphasis, p.303).

Moving from the micro (local) level to the macro (national) level however MacKay et al. concluded:

> "...internal labour markets in the British engineering industry are generally unstructured, i.e. the volume of internal mobility is limited, there is a port of entry at every level of skill, and such internal mobility as does occur is subject to few formal rules" (p.323).

In contrast to MacKay et al., Mace and Wilkinson (1977) and Mace (1979) found that engineering firms had particularly well developed internal labour markets. In a study of the engineering labour market in nine private and three nationalised British firms, Mace and Wilkinson (1977) found little support for the neo-classical

assertion that high-paying firms tend to recruit across a wider range of levels in the job hierarchy than low-paying firms. They divided firms into two groups (high- and low-paying) and compared the labour force structure existing in each firm to the entry structure in terms of job responsibility. Finding that the entry level in each firm was "very much below the average for the present labour-force structure" (p.12), they concluded that each firm tended to use the internal labour market to fill most of their job requirements higher up the occupation hierarchy.

In a study using a sample of 500 qualified engineers from the same twelve firms used in the Mace- Wilkinson study, Mace (1979) claimed: "It was stated policy in every firm to prefer internal to external appointments" (p.56). Half the vacancies in 6 of the firms were filled internally, while 90% of all promotions in the remaining firms went to internal candidates. Moreover, Mace believed similar structures existed for other workers as well:

> "On a priori grounds it can be argued that forces such as specific training and customary practice that give rise to internal labour market structures, are not likely to be confined to one category of workers. That is, firms concerned with career development paths, maintaining worker morale, etcetera, for one group of 'professional' workers will probably have the same concern for other similarly qualified groups" (p.59).

Ford et al. (1984) report the findings of two studies carried out in 1981-82 in the East and West Midlands on the processes of recruitment in the manufacturing and service industries. The first, by the Work and Employment Research Group at Loughborough University, comprised 41 organisations of all sizes and showed a

substantial use of the internal labour market for recruitment in the four occupational categories managers, routine non-manual, craft and manual. The second, carried out by the Research Unit on Ethnic Relations of the University of Aston, involved testing the extent of the internal labour market in 40 medium and large organisations. They found all firms used the internal market to recruit workers to the three occupational categories manual, skilled manual and routine non-manual, with the majority turning to it before recruiting from outside the organisation. In both studies it was noted that internal recruitment tended to be greater for workers in managerial and routine non-manual jobs than for those in craft and (skilled) manual occupations. That said however, a large proportion of vacancies in these two latter occupations were filled by internal promotion.

Finally, we consider an American study which considers mobility within the theoretical framework adopted by Doeringer and Piore (see Chapter 2.3). Alexander (1974) attempted to examine the relationship between internal labour market structures and labour mobility. Defining:

(1) an industry as manorial (or firm-specific) if firm mobility (proportion of workers in an industry who left their firms) was less than 10% per annum.

(2) an industry as having a guild structure (i.e. craft-like skills) if firm mobility minus industry mobility (proportion of workers in an industry who left that industry) was greater than 10% p.a. Here, inter-firm movement is expected to be high, though much of this takes place within a given industry.

(3) an industry as unstructured if firm mobility was greater than 20% p.a. and the industry did not have a guild structure,

he hypothesised that "structure is related to mobility" (p.66). Thus,

workers in manorial firms for example were considered less likely to quit than workers elsewhere, with the well developed internal labour markets to be found here offering sufficient inducement to make movement from the firm undesirable.

Alexander used the Social Security 1% work history file to generate a sample of more than 16,000 males aged 20-60 in 136 industries. This sample was then reduced because:

> "In order to accentuate the differences between structures as much as possible, only the most manorial, the most guild-like, and the least structured industries were chosen for most of the statistical analysis; and in order to reduce the effects of variations in racial composition, this shortened sample was confined to whites. This 'small' sample was composed of more than 8,900 white males from seventy-nine four-digit S.I.C. industries" (p.67).

He then uses this small sample to undertake a statistical analysis which relates a dependent binary variable (zero if an individual stayed with the firm, unity if he moved) to personal characteristics such as age, income and length of service. The predicted values from this equation are then averaged for each structural class and compared with the actual level of firm mobility. His findings for the period starting the first quarter of 1965 and ending the first quarter of 1966 are presented in Table 3.7. Alexander concludes:

> "Manorial industries reduce firm mobility by almost seven percentage points, and guild industries increase it by the same amount. Mobility of workers in the unstructured class of industries is little affected by structure" (p.72).

Reducing his sample to determine firm stability (defined as the complement of mobility) in the ten industries with the highest firm stability and the ten industries with the lowest stabiltiy (6),

Alexander then found average firm stability in the two to be 93.9% and 75.6% respectively. This implies firm mobility of 6.1% in the 10 most manorial industries and 24.4% in the 10 most unstructured. An inconsistency in his findings arises here therefore, for we see from Table 3.7 that actual firm mobility within the original sample of 22 manorial industries was also 6.1%. We would expect therefore that any measure of firm mobility in the 10 most manorial industries to be less than this, not the same. Furthermore, there appears to be little difference in average firm mobility in the 10 most unstructured industries (24.4%) and the original 32 unstructured industries (22.5%).

Alexander's study can also be criticised in a more fundamental way. In particular, it provides an inadequate explanation of the turnover process, failing to include a number of other important variables such as occupational type, plant size, the regional and/or urban concentration of workers, the effect of employment or unemployment growth, etc., resulting in a low level of explanation (R^2 = 0.20) for the 'mobility equation'. (See Chapter 7

Table 3.7 Actual and Predicted Firm Mobility by Structure

Structure	Actual Firm Mobility (%)	Predicted Firm Mobility (%)
Manorial (22 industries)	6.1	13.1
Unstructured (32 industries)	22.5	23.4
Guild (24 industries)	33.6	27.3

Source: A.J.Alexander (1974), p.72, Table II.

for a cross-section analysis along these lines). Firms in the manorial sector are likely to have a high proportion of both professional manpower and skilled manual workers who may have a low propensity to quit their employment. On the other hand, what have been termed guild industries may employ a high proportion of low grade clerical and unskilled manual employees who have the high quitting behaviour associated with secondary workers (7). His results may thus reflect a bias in his mobility equation which is overestimating low mobility and hence underestimating high mobility.

3.4 Relative Earnings and/or Occupational Mobility

Another aspect of labour market duality is to consider the ease with which an individual can move up (or down) the earnings hierarchy. Such mobility will almost certainly involve a significant change in occupation. This was one aspect of the Harris (1966) study which was discussed in the second section of this chapter under the heading of sex discrimination and occupational segregation (see Tables 3.5 and 3.6). In another piece of empirical research, Mayhew and Rosewell (1979, 1981) use a Hope-Goldthorpe scale of 'the general desirability of occupations' (8) to test for occupational mobility over a ten year period. They used data collected by the Oxford Social Mobility Group on a sample of over 10,000 men for 1972 and studied labour mobility between three segments: the upper and lower tiers of the primary sector and the secondary sector. While on the one hand they found "mobility at every point on the occupational distribution" (1979, p.107), they also found "substantial immobility"

between the three sectors (1981, p.225). In fact more than one third of their sample failed to experience mobility along the Hope-Goldthorpe scale of occupational desirability in their first ten years of employment. Moreover, and perhaps more significantly, many of those who did undertake mobility up or down this scale did so by only a limited amount. This applied equally to primary and secondary sector workers. On the basis of this then, they contend:

> "Certainly, it would be hard to conclude from this evidence that the labour market suffers from the sort of immobility segmented labour market writers would lead us to expect" (1979, p.107).

In another test for labour market duality, Schiller (1977) attempted to assess the extent of relative earnings mobility among American workers. More precisely, he set out to determine the actual distribution of earnings in specific years as well as workers' position therein. To this end he used the Longitudinal Employer Employee Data (LEED) file of Social Security Administration (SSA) records which contain quarterly observations on individual earnings histories for 1 per cent of all covered earners. His study focused on 74,227 males from the LEED file, all of whom were aged 16-49 in 1957 (the first year of his observation period), earned at least $1,000 in that year and were still at work in 1971, the final year of his study. The first and third conditions assured:

> "a sufficiently extended longitudinal framework without including workers who began working at unusually early ages or continued working past typical retirment ages" (p.931).

The second condition was introduced to exclude the movement of younger workers from part-time to full-time work.

Schiller focused his attention on whether workers "exchange relative earnings positions over time, ignoring changes in relative status brought about by differences in age" (p.931). He argued that such a cohort-specific focus was justified on the grounds that most workers tended to measure their own status in terms of that achieved by other workers of the same age. In an effort to isolate mobility within each cohort then, Schiller "reconstructed the earnings distributions specific to each five-year age cohort, in every year of the observation period", further sub-dividing each year's cohort-specific distributions into "twenty proportional, hierarchical ranks or ventiles" (p.931). Assigning each worker in the sample to a ventile rank in the earnings distribution for his cohort, he was then able to determine the extent to which relative earnings mobility occured by looking at the number of workers making changes in cohort-specific ventile rankings. Testing specifically for labour market duality he set the fifth ventile in the earnings distribution as the boundary between primary and secondary markets. His findings point to only 14.8% of the sample "remaining in the secondary market or in a fixed relative position within the primary market" (p.937). According to Schiller then, there appears to be a considerable movement of male workers out of low paying jobs into better paying ones. He concludes:

> "to the extent that earnings are a key descriptor of primary or secondary jobs, one may conclude that the duality model is not consistent with observed mobility patterns" (p.937).

However, it should be said here that Schiller's findings relate mainly to white male workers. No females were included in the study and black and ethnic minority workers were disproportionately

represented. Only 6,109 blacks were included in the study (8.2% of the total sample) at a time when non-whites made up at least 20% of the male working population. In other words, Schiller's study excluded a large proportion of those workers making up the secondary sector and his findings should not be considered all that surprising.

In another study, this time involving almost 18,000 male workers in Great Britain between 1965 and 1975, Metcalf and Nickell (1982) tested for labour market segmentation by examining mobility across a (396 x 396) occupational matrix. They distinguished between the primary and seconday sectors as follows:

> "The 50 most inferior occupations (on the subjective assessment of the authors) were defined as secondary. The one decision rule used was that these occupations had to be among the lowest 100 in the hourly earnings rankings. The 68 next most inferior occupations were defined as doubtful, providing they were in the lowest 150 occupations by pay ranking. The remaining 278 occupations were defined as primary" (p.349).

Their findings for three separate age groups and the full sample are presented in Table 3.8.

Taking workers of all ages first, two-thirds of those who began 1965 as secondary workers were still classified as such ten years later. On average then, only 2.3% of this group managed to secure jobs in the primary sector each year during the period. Young workers are much more mobile - both upward and downward - than other workers. For example, only a quarter of those who started 1965 in secondary employment remained there in 1975. This compares with 55% and 82% of workers aged 30-44 and 44+ respectively. Over half of the young secondary workers in 1965 had moved into primary occupations by

Table 3.8 Mobility Between the Primary and Secondary Segments of the Labour Market, 1965-75

1965	n	1975 % in Secondary	Doubtful	Primary
All sample				
Secondary	4277	68.7	8.1	23.2
Doubtful	2703	10.1	63.9	26.0
Primary	10727	5.4	4.7	89.8
Aged <30 (1975)				
Secondary	430	25.1	19.5	55.5
Doubtful	243	14.0	39.9	46.1
Primary	996	8.3	6.7	84.9
Aged 30-44 (1975)				
Secondary	1277	55.1	11.2	33.8
Doubtful	1037	8.6	58.6	32.8
Primary	4473	4.6	5.3	90.1
Aged 44+ (1975)				
Secondary	2570	82.1	4.7	12.5
Doubtful	1373	10.5	73.0	16.5
Primary	5258	5.6	3.8	90.6

Source: Metcalf and Nickell (1982), p.349, Table 18.

1975. Metcalf and Nickell identify secondary employees in "the making and repairing and painting, assembling, inspecting, and packaging occupations" (p.350) as the most likely secondary sector employees to move into primary sector employment. Younger workers also appear to undergo greater downward mobility however. More than 8% of primary sector workers in 1965 ended up in secondary sector jobs by 1975. Only 4.6% of workers aged 30-44 and 5.6% of those over 44 made similar moves during the period.

Even more recently Dickens and Lang (1985) used American data to test the following hypotheses:

> "that there is a distinct low-wage (secondary) labour market in which there are no returns to schooling and workers do not receive on-the-job training, and that there are non-economic barriers that prevent at least some secondary workers from obtaining better (primary) jobs" (p.792).

Both these hypotheses are, of course, important precepts of the dualist philosophy. Drawing their data from the thirteenth wave (1980) of the Panel Study of Income Dynamics, Dickens and Lang limit their study to 2,812 male workers who were heads of households, who worked more than 1,000 hours the previous year, who did not work in government and for whom data was readily available on education and marital status.

They consider the critical relationship to be that between wages and both education and experience. For primary sector workers the wage equation should be upward sloping with respect to these two explanatory variables while in the secondary sector the wage equation should be flat (unrelated to education and experience) and below that for the primary sector. They proceed by:

> "..... using maximum likelihood techniques. Since we do not know a priori with which wage equation to compare an individual, we estimate a switching model with unknown regimes. To do this we must specify two wage equations and a third equation that predicts sector attachment, and estimate all three equations simultaneously" (p.795).

Comparing their findings for their dual labour market model with the result for an ordinary least squares estimation, both for the full sample of workers and for a reduced sample of 1,696 males, they found two wage equations provided a better fit to the data than one. More precisely, they found:

> "a primary labour market with a wage profile similar to that predicted by human capital theory and a secondary market with a completely flat (low) wage profile" (p.792).

Testing for the presence of non-economic barriers to primary sector employment, they found that black workers were discriminated against when applying for primary sector jobs. Thus their findings disagree with those of Leigh's (1976) ten years earlier when she argued that neither the 1970 Census nor the National Longitudinal Survey provided evidence of "a systematic racial differential in the effect of inter-firm mobility on occupational advancement" (p.155). Dickens and Lang also found that white workers, married workers and workers in Standard Metropolitan Statistical Areas, were less likely to be found in the secondary sector.

The last word on occupational or earnings mobility has certainly not been said. Clearly, there are no absolute barriers to mobility between the primary and secondary sectors. Movement between them can take place, though to what degree is a matter for conjecture. The situation in the real world is complicated and such mobility almost certainly varies over time and between sex, occupation, organisation, etc.

3.5 Footnotes

(1) We shall not be considering the possibility of labour market segmentation arising from racial discrimination. Much of the early work on the dual labour market was in fact sparked off by a number of American studies in the late 1960s which showed two separate labour markets, one catering for white males, the other for blacks and various other disadvantaged groups. In Boston there were the findings of Doeringer et al. (1969), while in Chicago there were those of Baron and Hymer (1968). A third group, including Bluestone (1970) and Wachtel (1970), found evidence of labour market discrimination/dualism in Detroit, while Vietorisz and Harrison (1970) made similar discoveries in Harlem. The number of British studies of discrimination however is limited to a few authors such as Rose et al. (1969), Hepple (1968), Jones and Smith (1970), Bosanquet and Doeringer (1973) and Richmond (1973).

(2) This source was chosen for three reasons. First, it covered all industries, occupations and classes of workers. Secondly, it enabled Fuchs to glean important socioeconomic information about each worker. Finally, it allowed him to estimate hourly earnings for various groups of workers rather than annual earnings, the distinction being important in work of this nature because of the large differences that can occur between the sexes in hours worked per annum.

(3) Buchele ran the regressions for all job classes together (hence the term "pooled") and for each job class separately.

(4) Care should be taken when interpreting these results because the very broad occupational categories chosen (skilled, semi-skilled, unskilled and non-production) are bound to understate the extent of job changing.

(5) G.L.Palmer et al. (1962), p.14.

(6) He later equates lowest stability with the most unstructured industries. However, guild industries clearly have the lowest level of firm stability but industries of this sort would seem to have been excluded. His explanation is unclear on this point.

(7) Guild industries are a curious collection and include building contractors, highway construction, plastering and lathing contractors, scrap and waste (wholesale), gasoline stations, eating and drinking places, hotels and motels, cleaning and dyeing plants, and barber shops.

(8) The Hope-Goldthorpe scale ranges from 18 (self-employed manual workers such as street vendors, jobbing gardeners) to 82 (self-employed professionals such as doctors, lawyers, accountants) and is a measure of the desirability of occupation/status combinations. Status refers to whether a person is a manager, employee, self-employed etc.

Chapter 4 Labour Turnover

4.1 Importance of Turnover in a Company Context

Labour turnover is an organisational phenomenon whereby individuals working in a firm either decide to, or are forced to, leave that firm. Often taken as a proxy for an organisation's 'well-being', turnover can bestow both positive and negative implications on a firm. On the positive side it can create opportunities as employees may be promoted to replace those who leave and some turnover is probably necessary if a firm or organisation is not to become ossified. On the negative side however it also implies a financial cost, and excessive turnover can pose a serious problem. This extra cost can take the form of replacement costs (advertising, interviewing, screening, training, induction, etc.), as well as the potentially more serious costs of lost output and sales, and the cost of making up these losses including overtime and sub-contracting. The cost of turnover will clearly vary with occupation and will be greatest for skilled workers, particularly where firm-specific training is important. Labour turnover can also have damaging effects that are not measurable in financial terms, including the effect on workforce morale and the possible loss of customer goodwill due to the failure to fill orders and meet delivery dates.

For obvious reasons then, an important aspect of manpower planning in any company is the need to minimise turnover and with it the financial burden it imposes and the disruption it causes. Equally important is the need to continually monitor the level of turnover to ensure the company has the correct mix of labour available and will

not find itself short of workers in key occupations, particularly where training takes place over a long period of time. To facilitate decisions regarding manpower planning then, the company needs to have some idea of how long a worker will stay and/or the probability of leaving. Turnover statistics are probably some of the most vital information in a manpower planning context.

Nationally, statistical data on quitting shows it is high. The typical annual quit rate for males in the manufacturing industry in the 1970s for example was between 30 and 35%, while it was 40-45% for females, suggesting a labour force turning over completely every 2-3 years (see Figure 5.1). Main (1982) argues that such statistics give an impression of great instability in employment which is false, and he uses the New Earnings Survey in 1968 and 1979 to show that most employment falls in long jobs which are "around 20 years on average for full-time males" (p.325). He quotes the New Earnings Survey data for April 1979 which found that 16.6% of all full-time males had held their current job for more than 20 years (5.3% in the case of females), and a further 22.3% had held their current job for 10-20 years (14.5% for females). Similar statistics are presented in Tables 3.1 and 3.2 for 1968. He also found 36.0% of all full-time males aged 50-59 in employment in 1979 had held their current job for over 20 years and 39.7% of full-time males aged 60-64 in employment had held their current job for a similar length of time.

Main provides no breakdown of length of service by occupation. This is unfortunate because, as we shall see later, important differences can occur between occupations regarding length

of service distributions. However, that said, it would appear that Main's findings are consistent with the primary/secondary division of the labour market and the fact that long service in the former sector is rewarded by promotion via the internal labour market. It may well be that much of the turnover reported by the Department of Employment is confined to secondary sector workers. This is something we will need to look at in subsequent chapters.

Clearly then, it is important to break turnover statistics down in a meaningful way so that they provide information not only regarding the extent of quitting, but also who is leaving and why. However, before evaluating the various measures of labour turnover that have been used in the past (see Chapter 4.3), an acceptable definition needs to be settled upon. This is something that has concerned a number of labour economists ever since the earliest studies of labour turnover by Alexander (1915a, 1915b, 1916, 1917); Feiss (1915), Fischer (1916), Douglas (1918), U.S. Bureau of Labour Statistics (1918), Slichter (1919) and Brissenden and Frankel (1922).

4.2 Definitions of Turnover

One of the first definitions of turnover was that of the American Employment Managers' Conference at Rochester in 1918 which stated that:

> "Labour turnover for any period consists of the number of separations from service during that period. Separations include all quits, discharges, or lay-offs, for any reason whatever" (Kimball and Kimball 1947, p.485).

The practice of just using separations to indicate turnover is one

that was often used. As Watkins and Dodd (1938) were to remark twenty years later:

> "The method of measuring labour turnover in terms of separations not only reflects something of the significance of the changes in personnel to the employer but also suggests the losses entailed for the employer and for society. That is, separations present a general picture of the whole problem" (p.231).

Slichter (1919) too defined labour turnover as "all terminations of employment in the workforce, regardless of cause" (his emphasis, p.3), thus being at one with the Rochester definition.

An important move away from the use of this definition came in 1931 when the American Bureau of Labour defined turnover as "the replacements in a working force made necessary by employees leaving the service" (Walters 1931, p.215). This differs substantially from the Rochester/Slichter definition because it just considered leavers requiring replacement as turnover. Yet, the 1931 definition was nothing new for some writers had been suggesting this as a definition of labour turnover since the early 1900s when they argued that terminations should be excluded from labour turnover statistics if they were caused by recession. Their justification for not counting such terminations was that the loss of workers not requiring replacement represented no loss to the employer. This is something Slichter (1919) went great lengths to criticise when he argued:

> "It is impossible to agree with this view. From the standpoint of the employer it is misleading to assume that terminations of employment of men who are no longer needed and whose leaving, therefore, does not necessitate the hiring of new men, represent no loss. Most reductions in the working force are more or less temporary, due to seasonal fluctuations in the business or to more or less temporary business depression. The

time soon comes when business increases and additional men are required. It is then necessary to break in new men. The fact that it is cheaper to let men go than to pay them to do nothing does not alter the fact that a temporary reduction in the force represents as real a loss as do resignations or discharges of men who must be replaced immediately. The only difference is the immediateness with which the loss is felt. In the latter case it is necessary to break in a new man at once; in the former case the breaking in of a new man is postponed until business picks up. It is important for the employer to know how much cost of breaking in men he incurs because of fluctuations in the volume of his business" (p.4).

While not entirely agreeing with Slichter's argument, particularly his assertion that most reductions in labour are "more or less temporary" due to seasonal flucuations or temporary business depression, this thesis also rejects the 1931 Bureau of Labour Statistics (B.L.S) definition on the grounds that by excluding redundancies and layoffs it discards what can be a sizeable proportion of individuals leaving a firm within a given period.

More recently Price (1977) has defined turnover as "the degree of individual movement across the membership boundary of a social system" (p.4). This is an all-embracing definition that is concerned not only with individual movement from one firm to another but also with turnover <u>within</u> organisations such as government agencies, professional associations, prisons, labour unions, churches and armies. For our purposes then, Price's definition is too general. We need something more specific, something that relates directly to the business firm. Consequently, the most appropriate definition of labour turnover to settle on is that 'labour turnover is the movement of labour into and out of firms for any reason whatsoever'.

By its very nature then, turnover must be considered

dynamic, not static, and it is this concern with movement that has prompted writers such as Rice et al. (1950) and Parnes (1964) to refer to turnover as a 'process'. Parnes, for example, identifies two basic processes whereby the supply of labour can adjust to changes in demand. One of these is the relatively long process of change in the differential rates of entry into various occupations. This can be brought about by technological innovations as, for example, when the advent of computers reduced the need for large numbers of staff that might otherwise have been employed.

The second process that can be identified is the much shorter process by which persons already in the labour market respond to changes in the composition of demand. Included here then are changes from:

(a) one employer to another (inter-firm mobility)

(b) one industry to another (industrial mobility)

(c) one occupation to another (occupational mobility)

(d) intra-occupational movement across functional areas within the same company

(e) inter-factory mobility (keeping the same employer but moving to another factory/plant and/or subsidiary)

(f) one geographical location to another (geographical mobility)

(g) movement in and out of the labour force, this being greater among certain demographic groups than others.

In practice, different kinds of mobility may occur at the same time. Thus, an individual may move from one firm to another while at the same instance change occupation, industry and region. Only movement in and out of the labour force occurs exclusively of

the other types of labour mobility. Collectively, this second process is usually embraced by the more general term 'labour mobility'.

But how are labour turnover and labour mobility related? Clearly turnover is a necessary condition for the seven types of labour mobility listed above. Yet, while every instance of turnover involves labour mobility, every instance of labour mobility does not necessarily involve labour turnover. The distinction is an important one, as Hedberg (1967) was careful to point out. The study of labour movement in our three companies will involve looking at both labour turnover and labour mobility. Here then, we shall be considering (a) patterns of labour movement to and from each company and (b) patterns of labour movement within them, including inter-plant transfers and, more particularly, intra-plant changes in the form of occupational and/or functional changes. It is this last type of labour mobility that gives rise to the phenomenon known as internal labour markets. A full discussion of the factors giving rise to these markets was contained in Chapter 2.

Another important distinction that needs to be made is that between voluntary and involuntary turnover. The former occurs where workers leave a firm of their own accord. Involuntary turnover on the other hand includes deaths, ill-health and turnover not initiated by the individual but by the organisation in which s/he works. Equally important is the distinction between controllable and unavoidable turnover. The difference between controllable/unavoidable turnover and voluntary/involuntary turnover can be seen from the following:

Voluntary Turnover	Involuntary Turnover
1. Quits	7. Dismissals
2. Marriage	8. Death
3. Pregnancy	9. Illness
4. Early Retirement (*)	10. Retirement
5. Voluntary Redundancy (**)	11. Redundancy
6. Inter-plant and/or Company Transfers	12. Lay-offs

Controllable Turnover	Unavoidable Turnover
1. Quits	2. Marriage
4. Early Retirement (*)	3. Pregnancy
5. Voluntary Redundancy (**)	8. Death
11. Redundancy	9. Illness
6. Inter-plant and/or Company Transfers	10. Retirement
7. Dismissals	
12. Lay-offs	

(*) and (**) - will not always be identified.

The difference between the two types is important. Firms, in an effort to combat high turnover, will look closely at that part of turnover they can control and will therefore place great emphasis on controllable turnover. Thus, if we assume an economically healthy firm that wishes to maintain its workforce, the need for redundancies and/or layoffs will not occur; but if quits and dismissals are high, the firm must try to reduce them. If, however, the firm is experiencing a slump, it might well implement redundancies and lay-offs, encourage early retirement, and not be too concerned with quits and dismissals so long as they predominate among low-service employees.

Turning to voluntary and involuntary quitting, while workers are more concerned with turnover of the involuntary kind, firms are, in the main, more concerned with the most important and

usually the largest part of voluntary turnover, namely quitting. It is widely recognised that most turnover is of the voluntary kind, though involuntary turnover does tend to come to the fore when unemployment levels are high. As the Organisation for Economic Development and Co-operation (O.E.C.D.) (1965) report on 'Wages and Labour Mobility' in Germany and the U.S. concluded:

> "..... when activity is high and labour markets tight, mobility is predominantly voluntary; during spells of high unemployment, involuntary mobility comes to account for a far greater share of job departures" (p.63).

It would be nice to test this hypothesis by comparing turnover in the early 1980s, with more than 3 million people officially registered as unemployed, with that for earlier decades when unemployment was much lower. However, because Department of Employment statistics on labour turnover are collated in a way that prevents us from distinguishing between voluntary and involuntary mobility at a national level, we are unable to do this. Chapter 5 does undertake a time-series analysis of quit rates in the manufacturing industry to see how total male and female quitting are related to general economic conditions. This provides some interesting insights into the possible changes over time in voluntary and involuntary turnover for both short service (new recruits) and long service employees. Furthermore, when we come to consider labour turnover in our three companies, we shall make the distinction between voluntary and involuntary turnover and will attempt to assess how these are related to the immediate employment situation facing the firm. Such studies at the micro level should provide insights into the national trends.

In Chapter 6 we shall examine the many factors that influence labour turnover such as occupation, sex, age, length of service, wages, etc., while in Chapter 7 we shall present a cross-sectional analysis of quit rates in the manufacturing industry (males and females separately) to show how, and why, quitting varies across Minimum List Headings. But, for the time being, we need to turn our attention to the various measures of labour turnover and see how they compare.

4.3 Measures of Labour Turnover

This section provides a short appraisal of a number of different measures of labour turnover. For a more detailed account the reader is referred to Gaudet (1960), Van Der Merwe and Miller (1971) and Price (1977). We propose to look at the following measures here:

a. Crude Turnover Rates - Accession Rate
   - Separation Rate

b. Average Length of Service (both leavers and stayers)

c. Survival and Wastage Rates

d. Stability and Instability Rates

e. The Cumulative Length of Service Index.

(a) Crude Turnover Rates

Crude turnover rates provide a measure of the general level of labour turnover in a firm. They can be calculated as follows:

$$\text{Accession Rate} = \frac{A}{N} \times 100$$

where A = the number of new workers added during the period

N = the average number of workers employed during the period.

$$\text{Separation Rate} = \frac{L}{N} \times 100$$

where L = the number of workers who left during the period.

Such rates can be computed for particular departments or occupations in order to pin-point areas in a firm where turnover is heavy. These rates do, however, suffer from a number of drawbacks. In particular, they are prone to significant variations. For example, turnover calculated on accessions will be inflated when an organisation is expanding its workforce, while turnover calculated on the basis of separations will be misleading if the workforce is being contracted. They also lack precise meaning; as Van Der Merwe and Miller (1971) write:

"... a Separation rate of 100 per cent per annum could indicate:

(1) That the entire labour force had turned over once during the year.
(2) That half the labour force had turned over twice, the other half remaining stable.
(3) That a quarter had turned over 4 times,

and so on" (p.236).

Moreover, crude turnover rates also fail to distinguish between various lengths of service and the effect they have on turnover. One

can understand Silcock's (1954) lament therefore that "it would probably be better to abandon the rate and seek an alternative measure ....." (p.439).

(b) Average Length of Service

One such alternative is the average length of service. Here, turnover is considered to be a function of the length of service distribution of the labour force, with average length of service figures indicating just how stable a group is. This is important because labour instability in a firm is bound to result in the unsuccessful integration of new workers to the firm such that "few pass on to become long-service workers who may provide a stable core in the future" (Van Der Merwe and Miller 1971, p.239). A discussion of the results in Chapter 7 shows that this vicious circle, where firms are locked into a high turnover situation, does exist.

Two alternative measures of the average length of service variable have been suggested: the mean and the median. Both these statistics can be applied to workers leaving a firm, in which case the average completed length of service is being measured, or to the labour force at a given point in time. Statistically, the median is usually preferred, "generally lengthening as the labour turnover rates decrease" (Van Der Merwe and Miller 1975, p.22), so that it is more closely related to labour turnover than the mean. This of course is not surprising since the level of turnover within an organisation is strongly dependent upon the proportion of short service staff on the payroll. An added advantage in using the median completed length

of service is that it is particularly sensitive to the type, in terms of service, of workers leaving the organisation. As Price (1977) explains it:

> "If an organisation is experiencing a higher rate of turnover among its low service members than among its high service members (the customary situation in most organisations) this will be reflected in a relatively low median length of service for the leavers. If for some reason the turnover rate of high service members begins to increase, this will be immediately reflected in a relatively higher median for leavers" (p.14).

There are however some disadvantages in using the average length of service. When measuring the average length of service of workers staying with a firm, there is the potential drawback of being unable to give sufficient weight to turnover among low service workers who are more susceptible to high rates of turnover. We say 'potentially' because the problem of low service workers might be avoided by taking the average length of service of only those workers who have been with the company for more than one (or two) year(s). Estimates of the median length of service of workers leaving an organisation also suffer from the problem that they are usually based on a small sample, and minor fluctuations in the number leaving may significantly affect the estimates. Only when considering extremely large organisations does this problem disappear. Moreover, while the median completed length of service measurement has the advantage of being able to identify which type of workers are leaving an organisation, it cannot indicate the <u>extent</u> of turnover within the organisation as a whole. Its usefulness on its own therefore is considerably diminished.

(c) Survival and Wastage Rates

As an alternative to these average length of service indices, some writers look to survival and wastage rates. They can be defined as follows:

$$\text{Survival Rate} = \frac{S}{R} \times 100$$

where S = the number of new workers who remain (i.e. survivors) during a period.

R = the number of new workers recruited.

$$\text{Wastage Rate} = \frac{R - S}{R} \times 100$$

Both rates take the length of service as the key factor. Employees are grouped according to dates of engagement, and the turnover experience of each group or 'cohort' is recorded for a specified period of time. A separate table can be compiled for every group of entrants, with this record being maintained "until the wastage rate for that group has settled down as a small and slowly diminishing figure" (Byrt 1957, p.10). We can then go on to plot a 'Cohort Survival Curve' (CSC) which can in turn be used to predict the turnover which can be expected for each cohort over a period of time (providing, of course, all factors affecting turnover remain unaltered). The advantage of plotting CSCs is that they are able to provide more information on the nature of the leaving process than measures such as the average (median) length of service alone can do. Moreover, they enable the investigator to identify the time required for a cohort of new members to be reduced to half its original size,

the so-called 'half-life'.

One advantage of using these rates is that they control for length of service by confining themselves solely to the number of new workers who enter during a period. This is something other measurements, including the average length of service and stability/ instability rates, cannot do to the same extent. Other advantages that can be claimed for survival and wastage rates include the ability to assess the results of various recruitment methods and policies and the means to forecast future labour turnover and manpower requirements. Obviously these rates can be of tremendous value to organisations devoting a lot of time and money to manpower planning.

The main disadvantages associated with survival and wastage rates concern the size of the cohort and the time required to achieve groups of sufficient size. These rates are undoubtedly best suited to large organisations where a relatively large number of workers can be recruited to the firm in a short period of time. Clearly then, in small firms, where it may take a long time to recruit enough workers for analysis, the cohort may develop too much diversity, particularly where new members at the beginning of the period differ from new members at the end of the period.

(d) Stability and Instability Rates

These are defined as:

$$\text{Stability Rate} = \frac{\text{number of stock workers who remain during the period}}{\text{stock of workers at the beginning of the period}} \times 100$$

$$\text{Instability Rate} = \frac{\text{number of stock workers who leave during the period}}{\text{stock of workers at the beginning of the period}} \times 100$$

Clearly, the stability rate is based on those workers remaining in a period, while the instability rate reflects the number of members leaving in the same period, Each rate has a fixed range of 100 because both rates have the same denominator. Consequently, the two rates are exactly related such that the instability rate equals (1 - the stability rate).

One advantage of using these rates is their precise meaning: a stability rate of 70%, say, can be attained in one way only, namely that seven out of every ten of those employed at the beginning of a period remain with the organisation at the end of the period. Another advantage is that they correlate with elements such as job satisfaction. According to Bowey (1969):

> "The turnover rate is biased towards emphasising the new recruits to the firm, whose decisions to leave do not necessarily relate to a general level of dissatisfaction within the firm. The stability index ..... emphasises the behaviour of the long service personnel. When they start leaving the reason is more likely to be related to general dissatisfaction in the firm. For this reason it is to be expected that the stability index of a firm, measured at different points in time, will correlate more closely with elements of job satisfaction than turnover rates do" (her emphasis, p.83).

G.K.Ingham (1967) is another who writes in the same vein when he

claims:

> "In certain cases - for example those in which a small number of unpopular jobs are causing a high rate of separation - the 'stability rate', that is, the proportion of long service workers in an organisation, may be a more suitable index of organisational attachment than either the total 'separation rate' or the 'quit rate'" (p.240).

In other words, the use of a stability index at least gives some indication of labour continuity within the organisation.

But both rates fail to identify the extent of turnover taking place during the period. Because these rates are calculated over a period of time, say one year, then there is sufficient time for a number of workers to be taken on after the beginning of the period but have left before that period ends, and thus not be recorded.

The use of stability and instability rates also suffers from insufficient control for length of service, one of the most crucial variables affecting labour turnover. According to Price (1977) however, this disadvantage can be:

> "partially corrected ..... for if the number of members at the beginning of the period is large enough, the members can be subdivided by length of service, and stability and instability rates calculated for the subdivisions" (p.18).

He goes on to state that there could even be:

> "an instability rate for members who at the start of the period had been with the organisation for less than one year" (p.18).

But this procedure still fails to take account of workers who, for

example, entered the organisation one year prior to the beginning of the period, but left before the period had begun.

(e) Cumulative Length of Service Index

Bowey (1969, 1971) offers an interesting alternative to much of the above. Continuing with this theme of trying to identify an adequate measure of labour turnover that makes allowances for different lengths of service, Bowey identifies one such index in the Cumulative Length of Service Index (CLSI). According to Bowey (1971), this index provides the investigator with a long-run picture of the firm's labour force in terms of how many members it employed 5 years, 10 years ..... 50 years ago, etc., providing a backdrop against which one can consider the present (i.e. short-run) situation. In her opinion:

> "If employers were to keep records of their 'labour stability' as well as their 'labour turnover' they would be able to glean much more information from these two simple indices than they ever could from one of them alone" (p.28)

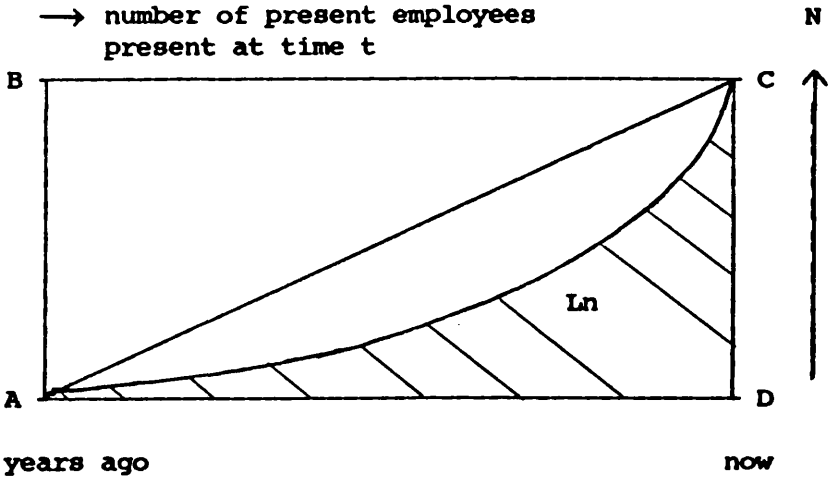
She continues:

> "High stability and low turnover indicates that a firm does not have a labour wastage problem of any significance. Low stability and high turnover indicates a widespread problem of labour wastage in the firm. High stability and high turnover indicates that a small section of the labour force is being replaced repeatedly - probably because their jobs are less rewarding as compared with other jobs in the firm. Low stability and low turnover indicates a mild problem of labour wastage which is widespread in the firm. An increasing rate of labour turnover indicates a deterioration in the firm's labour market position. A decreasing rate of labour stability indicates a worsening of industrial relations within the plant" (p.28).

Bowey calculates this particular index by comparing the area under a 'stability curve' with an area of 'maximum possible

stability'. Thus we have in Figure 4.1 below a maximum possible stability area of (n * N) - the rectangle ABCD - where all employees with the company now have been there for the whole time period considered, and a shaded area Ln representing the total length of service of all present employees measured over the past 'n' years.

Figure 4.1 Stability Curve and Area of Maximum Stability



This gives us the stability index:

$$\frac{Ln}{n * N} \times 100$$

where Ln = the total length of service of all workers employed by the firm over the past 'n' years.

N = the total number of workers.

n = the number of years over which stability is being measured.

Clearly, the area under the curve is closely related to the curve's concavity to the t-axis and where it intercepts that axis.

It is difficult however to envisage a firm where all

employees have been with the firm for the total time period considered (the theoretical maximum) because this would mean that, taking Bowey's example of a firm that started up 50 years ago, such a firm would have come into existence with an optimum size workforce all of whom joined at the same time and age (15 years old) and no one left for any reason at all (even through ill-health, or death!) during that time. Instead, it is much more realistic to think of a firm where some labour movement does take place among workers of different ages so that we have a situation where workers are moving in and out of the firm (Bowey 1969, 1971). For example, a theoretical minimum for the overall turnover rate may be 2.5% p.a., with 2% being unavoidable (in particular death and retirement) and 0.5% being controllable. Projecting this back in time we see that 75% of the present workforce were with the firm 10 years ago, 50% were with it 20 years ago, and so on, such that no one has more than 40 years' service. In this case n = 40 years, and the maximum possible stability is the area under the diagonal AC in Figure 4.1.

The triangle ACD is only the appropriate maximum for a company which has maintained a constant labour force throughout the period. Naturally, of course, we should like to construct a maximum possible stability curve for a firm that includes expansions and/or contractions in its workforce during the period. However, this is a difficult exercise involving a detailed knowledge of past employment and is certainly not possible for the three companies used in our case studies. The cumulative length of service index is used in Chapter 12 to make comparisons of the extent of labour stability between the three companies.

4.4 Conclusion

Clearly then, all these indicators of labour turnover have a number of advantages and disadvantages. While some fail to measure the extent of turnover (the average length of service and stability and instability rates) others do it quite well, particularly the crude labour turnover rate. Similarly, while some measures fail to give sufficient weight to low service members (crude turnover rates and the average length of service of workers staying with a firm for example), others do, including survival and wastage rates, the average length of service of workers leaving a company and the CLSI. So, while on the one hand no measure deserves to be used on its own, on the other, no measure should be discarded either. Consequently, when it comes to estimating labour turnover, we shall make use of all five measures at various stages in the analyses.

Chapter 5 Time-Series Analysis of Manufacturing Quit Rates, 1949-83

5.1 Introduction

Commentators have generally supposed that the wider labour market conditions have an influence on quitting. A number of studies investigating the relationship between job turnover and the state of the economy as indexed by employment and/or unemployment levels have been carried out, and it is generally accepted that the relationship between employment and labour turnover is positive, while that for unemployment and turnover is negative; see for example Cook (1951), Behrend (1953), March and Simon (1958), Ross (1958), Hedberg (1961), Knowles (1964b), Stoikov and Raimon (1968), Burton and Parker (1969), Wales (1970), MacKay et al. (1971), Fry (1973), Anderson (1974), Price (1977) and Mobley (1982). Writing in 1961, Hedberg noted that "labour turnover varies directly with several measures of employment, and indirectly with measures of unemployment" (p.129). Some years later, Stoikov and Raimon arrived at a similar conclusion after running a cross-sectional multiple regression of quit rates on nine independent variables in 52 industries for the years 1963 and 1966. They concluded that the general level of business activity was positively related to quit rates. In a similar vein, Burton and Parker regressed a number of different variables (seventeen) against quit rates in 49 three-digit manufacturing industries for the year 1960 and found a negative relationship between quitting and the rate of unemployment. Wales, in a study using both cross-sectional and time-series data for 18 United States two-digit manufacturing industries for the period 1958-67, also found the quit rate to be significantly affected by the unemployment rate. In another study,

Fry found support for the hypothesis that unemployment was negatively related to voluntary turnover when he ran two time-series regressions, one for quit rates in 23 industries over the period 1947-70, the other for quit rates in 36 industries during the period 1950-70.

We see here then that while some of these studies have tended to consider the relationship between labour turnover and the labour market situation in any one given period, others have looked at it over time. We shall be postponing until Chapter 7 any cross-sectional investigation of the relationship however, concentrating on a time-series analysis of it here.

5.2 The Model

Figure 5.1 shows the extent of male and female quitting in the post-War period. The quit rate used here is for all manufacturing industries as recorded four times a year (February, May, August and November) in the Department of Employment Gazette. Observed over a four-week period, these estimates fail to make the desired distinction between voluntary and involuntary turnover. This is unfortunate because much of the later analysis on labour turnover in our three companies does differentiate between the two. Some comfort however may be drawn from the studies reported in Shorey (1980) indicating that quits or voluntary turnover account for a large proportion of total separations (1).

Account was taken of seasonality by taking a moving average of the quit rates which was then multiplied by 13 to obtain an annual

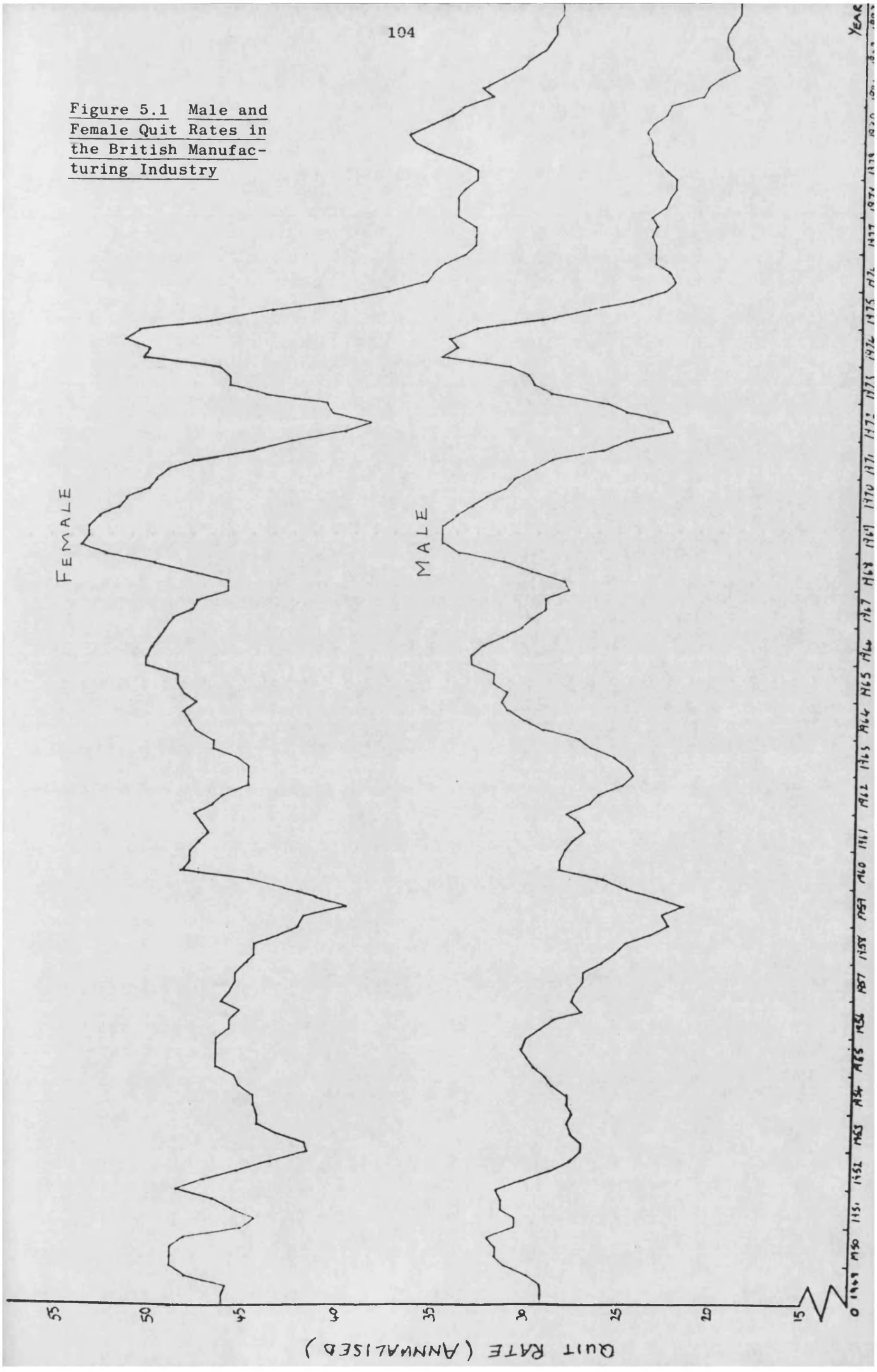


Figure 5.1 Male and Female Quit Rates in the British Manufacturing Industry

quit rate. Looking at the Figure it is clear that female quitting exceeds male quitting in every instance. Three separate periods can be identified. During 1949–67 there was no long-term trend with the female rate averaging 45% and the male rate averaging some 27%. By contrast, 1968–74 saw pronounced fluctuations in both rates. The female rate rose to an all time high of 54% in 1969 and then fell to 39% by 1972, before rising back to 51% at the end of 1974. The male quit rate followed an identical pattern reaching a peak of almost 35% in 1969 and 1974. In a matter of years then both the male and female quit rates had increased so much that they were both twelve percentage points greater in 1974 than in 1972. It is no coincidence that unemployment rose rapidly from mid-1970 to early 1972 and then declined almost equally rapidly up to the end of 1973.

Finally, quit rates fell dramatically during the third period since 1974. Both rates fell in 1975 and 1976 at a time when unemployment was rising quickly. They then levelled off between 1977 and 1979, a time when unemployment was fairly stable. However, the dramatic rise in unemployment which has taken place so far during the 1980s has seen quit rates fall to historically low levels. Yet, that said, it is perhaps surprising that, with unemployment averaging 13% in 1983, there still should be so much quitting; nearly 30% p.a. for females and just under 20% p.a. for males. Under the circumstances, one might have expected both rates to have fallen further.

So far we have just considered the relationship between unemployment and quit rates. It should be said here however that quit

rates are influenced by a number of different variables including wage rates, length of service, age, etc., which will be discussed fully in Chapter 6. For the time being however it is sufficient to highlight the impact reductions in the recruitment rate have had on both employment levels and the propensity to quit in the manufacturing industry. As we shall see later, new recruits have considerably higher quit rates than workers with long lengths of service. Reducing the number of short service employees then is bound to push quit rates down. Recognising the influence new recruits have on quit rates therefore, we have included in our study a measure of the proportion of workers who have less than twelve months' service.

Thus, we have distinguished between two distinct groups of workers: a "core" group consisting of workers with sufficiently long lengths of service to be considered "established" employees, and a group made up of workers with short lengths of service. It is our intention to see how the quit rates for the two groups vary over time and to examine the effect of general labour market conditions on them. Consequently, when regressing male and female quit rates separately over the period 1949-83 we shall be dealing with two components: first, a core quit rate (a) and the proportionate effect of the labour market on the quit rate for core workers (b), and secondly an excess quit rate for new recruits (c) and the proportionate effect of the labour market on this excess quit rate (d). Thus we have the following equation:

$$\overline{QR}_t = a[1 + bLM_t] + c\overline{AR}_t[1 + dLM_t] \qquad (1)$$

where $\overline{QR}_t$ = the annual quit rate in period t, measured as

$$(QR_{t-2} + QR_{t-1} + QR_t + QR_{t+1}) * 3.25$$

where QR is the number of discharges and other losses in the manufacturing industry in a four-week period.

LM_t = an indicator of labour market conditions in period t and measured as $(\overline{U}_t - \overline{V}_t) / \overline{V}_t$ where:

1) U is the number of persons unemployed in Great Britain and adjusted for seasonal variations as follows:

$$(U_{t-2} + U_{t-1} + U_t + U_{t+1}) / 4$$

and 2) V is the number of unfilled vacancies in Great Britain and adjusted for seasonal variations as follows:

$$(V_{t-2} + V_{t-1} + V_t + V_{t+1}) / 4$$

The same measure of labour market pressure was used for both the male and female equations.

$\overline{AR}_t$ = the proportion of workers joining within the last 12 months and defined as:

$$(AR_{t-4} + AR_{t-3} + AR_{t-2} + AR_{t-1}) * 3.25$$

where AR is the number of engagements in the manufacturing industry in a four-week period.

Expanding Equation 1 gives us the linear form:

$$\overline{QR}_t = a + abLM_t + c\overline{AR}_t + cd\overline{AR}_t LM_t \qquad (2)$$

Here then, as the labour market situation worsens (i.e., as LM_t

increases) we would expect the quitting behaviour of our two groups of workers to alter. We have already seen when discussing Figure 5.1 that quit rates do fall as unemployment increases. But we noted that they failed to fall as much as might have been expected. Part of the explanation for this might lie in the fact that over the last 5 or 6 years workers in established jobs have been faced with conflicting pressures on their propensity to quit. While voluntary quits have fallen due to fewer job opportunities and the reluctance of workers to quit work while seeking alternative employment, the increased likelihood of redundancies and/or the pressure to take early retirement are likely to have combined to force quit rates up. It will be interesting to see which one dominates. For new recruits we would expect a deteriorating employment situation to lead to reduced quitting, i.e. (d) should be negative.

5.3 The Results

When estimating Equation 2 we have used the two stage iteration procedure suggested by Cochrane and Orcutt (1949). This transforms the dependent and independent variables so that the residuals from the transformed equation will be roughly serially uncorrelated, and then runs a regression using the transformed variables (2). Table 5.1 below presents our results. There are two sets of equations, one for males and one for females. Included in the second equation in each case are an additional group of low service employees with between 13 and 24 months' service ($\overline{AR}_{t-y}$). It is thought that such workers may also have an excess quit rate (e), but with (e) being less than (c), and that changes in the labour market

have a proportionate effect on this excess quit rate (f). The following term was added to the explanation of QR:

$$e\overline{AR}_{t-y}[1 + fLM_t]$$

which can be expressed in linear form:

$$e\overline{AR}_{t-y} + ef\overline{AR}_{t-y}LM_t$$

We see from Equation 1 that when the level of unemployment matches that of vacancies, the male core quit rate equals 15.29%. The effect of the labour market variable on the quitting behaviour of established male workers is both positive and significant, suggesting that the quit rate for core workers is being pushed up by involuntary quitting when the labour market situation deteriorates (3). This might explain why quit rates today are still relatively high at a time when unemployment is currently approaching 3.5 million. Contrast this with the situation regarding male workers with up to 1 year's service. Here we see that when unemployment equals vacancies, the excess of starters quit rates over the core one is 49.02%. This coefficient is highly significant and suggests a quit rate of 64.31% for this group.

Equally interesting is the effect the labour market has on the quitting behaviour of low service employees. While it was positive for core workers, it proved to be negative and significant for low service workers. Here then, as the labour market situation worsens, workers in this service category are seen to curb their quitting behaviour.

Table 5.1 Regression Explanation of Male and Female Quit Rates, 1949-83

		←Males→		←Females→	
Variable	Coefficient	1	2	3	4
Constant	a	15.29	13.39	28.16	15.37
		(1.90)	(2.71)	(2.89)	(3.91)
LM_t	ab	0.32	0.40	0.25	0.60
		(0.14)	(0.18)	(0.21)	(0.26)
$\overline{AR}_t$	c	49.02	48.22	38.61	41.38
		(6.02)	(6.39)	(5.75)	(5.66)
$(\overline{AR}_t)(LM_t)$	cd	-3.18	-3.13	-2.14	-1.91
		(0.89)	(0.92)	(0.81)	(0.77)
$\overline{AR}_{t-y}$	e		7.30		25.69
			(7.07)		(6.45)
$(\overline{AR}_{t-y})(LM_t)$	ef		-0.43		-0.95
			(0.74)		(0.64)
R^2		0.440	0.427	0.399	0.509
D-W		1.558	1.545	1.385	1.513
Implied Values	b	0.021	0.030	0.009	0.039
	d	-0.065	-0.065	-0.055	-0.046
	f		-0.059		-0.037

Numbers in brackets are standard error estimates.

D-W - Durban Watson statistic.

It is well documented how the labour market has behaved during the post-War period. More recently we have witnessed a tremendous increase in the number unemployed, as well as a rapid fall in the number of vacancies, which is bound to have had an effect on

the quitting behaviour of workers. Just how our two groups of male workers have been affected by this can be seen from Table 5.2 below. Here we have substitued the labour market situation in three periods - 1968 (the year of our cross-sectional study in Chapter 7), 1976 (the year of the manpower audit in Company A), and 1980 (the time of the manpower audit in the other two companies) - into Equation 1 so as to measure the impact of the labour market on the two groups in those years. In 1968, when the number unemployed was virtually double the number of vacancies, the male core quit rate was 15.60% compared to a quit rate among new recruits of 61.52%. By 1976 however, the labour market situation had worsened so much that there were now 10 people unemployed for every single vacancy. The effect this had on the two groups is clear: while the core quit rate increased to 18.08%, the proportion of new recruits quitting fell to 39.34%. The labour market situation continued to deteriorate after 1976 so that

Table 5.2 Estimates of Male Quit Rates for Core Workers and Starters in Different Labour Market Conditions (*)

Variable	1968	1976	1980
$(U_t - V_t) / V_t$	0.975	8.728	15.332
Male Core Quit Rate (a)	15.60	18.08	20.20
Excess of Starters Quit Rate (c)	45.92	21.26	0.26
Starters Quit Rate (a + c)	61.52	39.34	20.46
Ratio: (a + c)/a	3.94	2.18	1.01

(*) Estimated using Equation 1 in Table 5.1.

by 1980 unemployment was 16 times greater than the number of vacancies. Once again we see that this produced a small increase in the core quit rate to 20.20%. But more significantly there was another substantial fall in the starter quit rate to 20.46%. By 1980 then, the labour market situation had got so bad that new recruits were quitting their jobs at much the same rate as established employees. This compares with four times as many in 1968, and twice as many in 1976.

Our findings are important because they show low service employees reacting differently to long-service workers. While a worsening labour market situation has tended to increase the core quit rate (suggesting that of the two pressures mentioned earlier, increased redundancies and early retirements have dominated so much that, although voluntary quits may have fallen, increases in involuntary rates have actually pushed the core quit rate up as the labour market situation has deteriorated), it has produced a dramatic fall in the proportion of new recruits quitting employment.

Introducing the second short service variable to take account of male workers with 13 to 24 months' service (Equation 2) is not a success in that the two extra variables, i.e. the excess quit rate over core workers and the effect of labour market conditions on this excess quit rate, are not significant.

We now turn to those equations showing female quit rates. In Equation 3 we see that the quit rate among established female workers is significantly different from zero and, at 28.16%, is almost twice the male rate. Once again, the effect of the labour

market on core workers is positive but, unlike in the male case, it fails to reach significance, even at the 10% level. The excess quit rate for female workers with up to 12 months' service is 38.61% and highly significant. The effect of the labour market on this group is significantly negative so that a worsening labour market situation reduces quits. Introducing a second group of low service employees into Equation 4 produces some interesting results. While the core quit rate falls to 15.37% (similar to the male one) the effect of the labour market on the core group increases in magnitude and significance. The estimates, and significance, of the coefficients (c) and (cd) in Equation 4 are little changed from Equation 3. Females with 13 to 24 months' service have an excess quit rate which is significant and equal to 25.69% and we see that there is an inverse relationship between their propensity to quit and the situation in the labour market (although this just fails to reach significance at the 10% level).

Earlier we analysed the impact a changing labour market situation could have on male quit rates. Carrying out a similar study for females using Equation 4 (the fact that the quit rate for the second group of starters reached significance makes this equation preferable to Equation 3) gives the results presented in Table 5.3. In 1968 then, the female core quit rate was 15.96%. This compares with a quit rate of 55.48% for workers with 1 to 12 months' service, and one of 40.72% for workers with 13 to 24 months' service. By 1976 however, with the labour market situation worsening, the female core quit rate increased to 20.61%, while the other two rates fell to 45.32% and 38.01% respectively. During this period therefore, the

Table 5.3 Estimates of Female Quit Rates for Core Workers and Starters in Different Labour Market Conditions (*)

Variable	1968	1976	1980
$(U_t - V_t) / V_t$	0.975	8.728	15.332
Female Core Quit Rate (a)	15.96	20.61	24.57
Excess of Starters (1-12 months) Quit Rate (c)	39.52	24.71	12.10
Starters (1-12 months) Quit Rate (a + c)	55.48	45.32	36.67
Excess of Starters (13-24 months) Quit Rate (e)	24.76	17.40	11.12
Starters (13-24 months) Quit Rate (a + e)	40.72	38.01	35.69
Ratio: (a+c)/a	3.48	2.20	1.49
Ratio: (a+e)/a	2.55	1.84	1.45

(*) Estimated using Equation 4 in Table 5.1.

fact that the deterioration in the labour market had pushed the core quit rate up indicates that redundancies and early retirements were increasing at a faster rate than voluntary quits were falling. Short service workers however can be seen to have behaved in an entirely different way. Both rates fell from their 1968 level with the quit rate for workers with 1 to 12 months' service falling most. Similarly, in 1980, as the labour market situation worsened further, the female core quit rate increased even more to 24.57%, confirming the earlier trend. Once again, the quit rate for both low service groups fell so that workers with under one year's service and those with between 1 and 2 years' job tenure both had a quit rate close to

36%.

Thus, female quit rates display the same patterns of behaviour as male ones. In both cases, as the labour market situation worsens, core quit rates increase and short service rates decrease. It is noticeable however that in 1980, the quit rate among females with 1-12 months' service was nearly twice that of males, whereas in 1968 and 1976 the difference between them was considerably smaller with the male rate actually being the greater in 1968. It is clear then that the deterioration of the labour market situation between 1976 and 1980 affected the quitting behaviour of short service males more than it did short service females. Furthermore, it tended to push the female core quit rate up nearly twice as much as it did the male one. Also noticeable is the fact that female quit rates for short service workers are still, in 1980, considerably higher than for core workers. A number of factors could have contributed to these observations. For example, employers might have been more willing to lay-off short service female employees than short service males, particularly if they were part-time (as in the case of many married female workers for example). Alternatively, more women might have opted for early retirement or redundancy than males, particularly where they were not the household's main source of income. The tremendous rise in part-time female employment might also have played an important role because such workers tend to be motivated differently to full-time workers and are more likely to move out of employment. Few would disagree with the notion that in a depression, the tendency for workers to voluntarily quit into unemployment is reduced. However, despite depression, many female

workers may still quit for reasons such as marriage, pregnancy and child care.

Despite extremely high levels of unemployment then, there is little doubt that manufacturing quit rates (both male and female) have continued to remain high over the last few years. It would appear from our analysis that one explanation of this apparently paradoxical situation is that there are two separate groups of workers operating in the labour market, each responding differently to the situation in that market regarding the number out of work and the number of unfilled vacancies. First, there is that group of workers (core workers) whose overall quit rate rises as the number of workers quitting for involuntary reasons increases at a faster rate than the number of workers quitting for voluntary reasons falls; and secondly, there appears to be another group (low service employees) whose overall rate of quitting declines as the labour market situation deteriorates.

The results suggest a complex set of changes, with differences between males and females and/or short service and core workers, and the three company studies will attempt to throw more light on the quitting behavour of these various groups. What does seem certain from the results in this chapter is that the relative importance of involuntary quitting has been changing and accounting for a higher proportion of total turnover as the level of unemployment has risen.

5.4 Footnotes

(1) Shorey (1980, p.828-9) quotes the following examples:

(a) American studies using United States Bulletin of Labour Statistics (1972), which differentiate quits from involuntary separations, showed that turnover statistics compiled every six months for the period 1957-69 revealed quits accounted for 60% of all separations. In another study, Medoff (1979) found "a mean monthly quits element of 70% 1959-1979".

(b) For the United Kingdom, studies by Harris (1966) and MacKay et al. (1971) found quits to be dominant. Harris found male quits accounted for 60% of total male separations over a ten year period for example, while MacKay et al. found total quits accounted for well over 70% of total separations depending on business activity.

Curran (1981) too reports the findings of an unpublished study by MacKay et al. (1976) which "concluded that voluntary quits account for the vast majority of discharges and other job losses in Great Britain" (p.205).

(2) See "Time Series Processor", User's Manual, Version 3.5, by B.H. Hall and R.E.Hall, April 6 1980, pp.22-3.

(3) Every unit increase in LM_t increases the core quit rate (a) by 0.32. Thus (b), the proportionate effect of changes in LM_t on the core quit rate is 0.32/15.29 or 0.021. The implied values of (b), (d) and (f) are given in the lower part of Table 5.1.

Chapter 6 Factors Affecting Labour Turnover

6.1 Introduction

In the next two chapters an attempt is made to understand labour turnover and to measure the impact of the different factors on this process by undertaking a cross-section analysis using Minimum List Headings (MLH) in Great Britain's manufacturing industry in 1968. We are constrained in our choice of date by the availability of appropriate data for use in statistical analysis. There is massive variation in the annual quit rate between the different MLHs. In 1968, the male quit rate was lowest at 8.5% in Mineral Oil Refining (262) and highest at 77.0% in Jute (415) (1). Similarly the female quit rate ranged from 12.4% in Mineral Oil Refining to 81.9% in Fruit and Vegetable Products (218).

The frequency distribution, see Table 6.1, confirms the picture derived from the time series analysis that turnover was a serious problem. About one third of the MLHs had a male quit rate of between 30 and 40% p.a., while in 9 branches of manufacturing this rate exceeded 50%. The average male (unweighted) quit rate across the 104 MLHs was 33.3%. Contrast this with the female case where nearly 40% of the MLHs had a female quit rate of between 40 and 50% p.a. Moreover we also see that 13 MLHs had a female quit rate in excess of 60%. The average female (unweighted) quit rate across all 104 MLHs was 46.2%.

The scatter diagram, see Figure 6.1, shows that the female quit rate in any MLH was nearly always higher than the male rate. The four exceptions to the observation were in Spinning and Doubling of

Figure 6.1 Correlation of Male and Female Quit Rates in the Manufacturing Industry, 1968

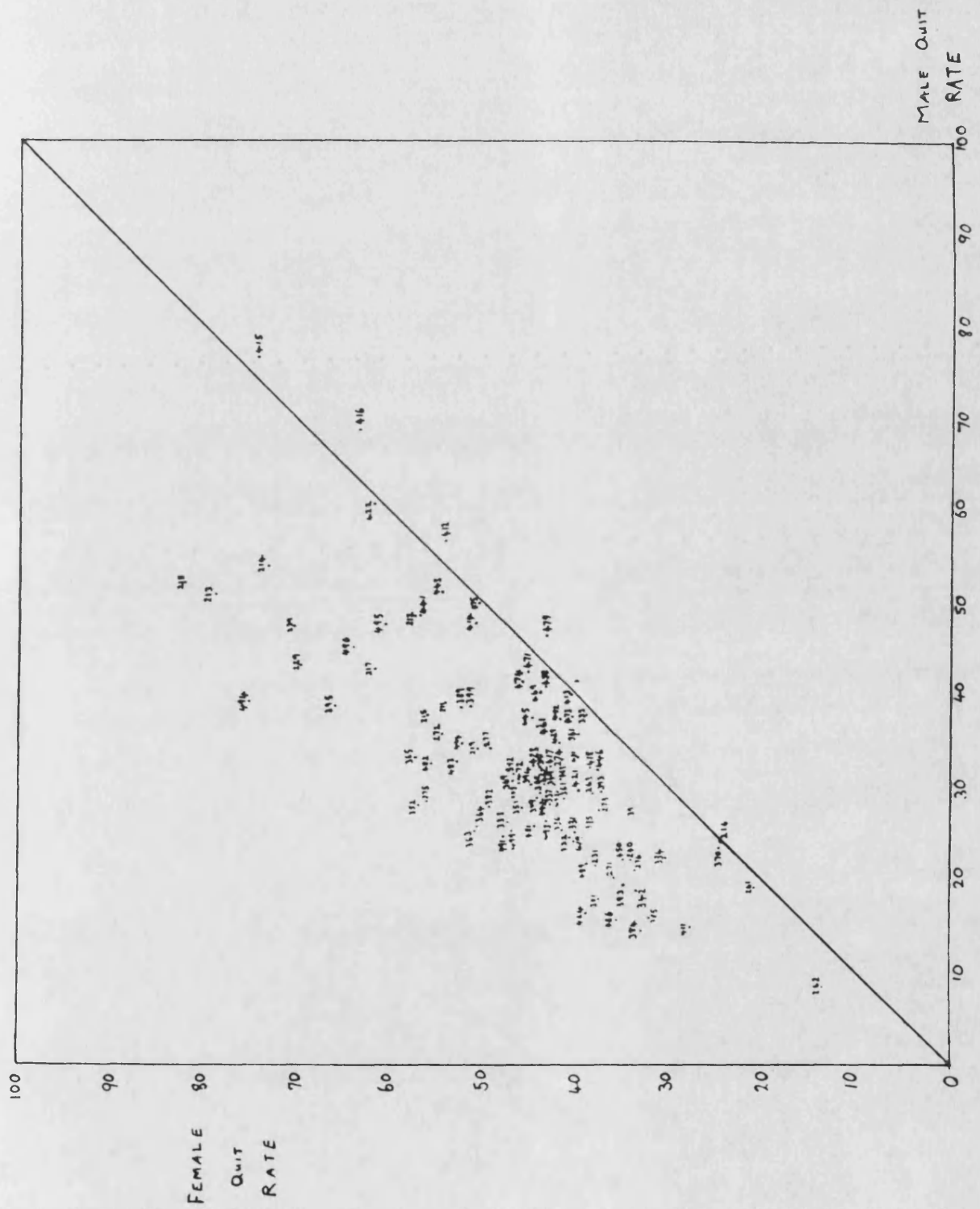


Table 6.1: Frequency Distribution of Male and Female Quit Rates Across 104 Minimum List Headings in the British Manufacturing Industry, 1968

	Frequency	
Quit Rate (%)	Males	Females
0.0- 9.9	1	-
10.0-19.9	9	1
20.0-29.9	36	4
30.0-39.9	36	25
40.0-49.9	13	41
50.0-59.9	6	20
60.0 +	3	13
Total	104	104
Average (%)	33.3	46.2

Source: See Appendix to Chapter 7

Cotton, Flax and Man-Made Fibres (412), Jute (415), Rope, Twine and Net (416), and Miscellaneous Wood and Cork Manufactures (479). There were in fact 6 MLHs where the female quit rate was more than twice the male rate; this occured in Watches and Clocks (352), Telegraph and Telephone Apparatus (363), Motor Vehicle Manufacturing (381), Locomotives and Railway Track Equipment (384), Cement (464), and Printing, Publishing of Newspapers and Peridocals (486).

This chapter is devoted to a detailed examination of the different factors that might affect turnover. For the sake of convenience these are grouped into two categories: (a) individual factors such as sex, age and job tenure that are unique to each individual, and (b) organisational variables such as pay, plant size, etc., that affect the individual but are not, in the main, determined by him. The chapter also includes a brief discussion of other

unquantifiable variables that could influence turnover and concludes with a brief review of empirical studies undertaken in this area. The empirical analysis is reported in Chapter 7.

6.2 Individual Factors

Sex

Any worthwhile study of quit behaviour clearly needs to distinguish between male and female quit rates. When considering the sex composition of the workforce an additional distinction needs to be made between married and non-married females. Numerous studies have been carried out in the past analysing sex differences in quit behaviour and females are typically depicted as having higher turnover rates than males. This is the general conclusion of a large number of studies; see for example Silcock (1954), Behrend (1955), Hedberg (1961), Harris (1964), Young (1965), Azumi (1969), Moffatt and Hill (1970), Pencavel (1970), Singer (1970), Mackay et al. (1971), Armknecht and Early (1972), and Barnes and Jones (1973, 1974), to name but a few. Young for example, despite urging caution, agrees with Hedberg's contention that "labour turnover is ..... lower for men than for women" (p.130), while Behrend, in a comparative study of labour turnover rates, comments: "In English factories labour turnover is usually higher for women than for men" (p.62).

It is important to recognise that there is conflicting evidence regarding the greater propensity to quit employment among females. Studies by Bergen (1926), Long (1951), Silcock (1954), Behrend (1955), March and Simon (1958), Wales (1970), Katzell et al.

(1971), Clowes (1972), Goodman et al. (1973), Barnes and Jones (1973, 1974) (2) and others, all show females to have lower rates of turnover than males. Clowes for example claims that:

> "when a comparison is made of labour turnover of males and females in the same factories, it can be seen that there is no justification for the oft-repeated statement that labour turnover among women is higher than among men" (p.252).

Even more recently Shorey (1983) argues that discharge figures like those produced by the Department of Employment are "misleading because they fail to distinguish sex-specific differences in quit behaviour from differences associated with such factors as job characteristics and market opportunities" (p.213). The argument here is that if, for any given occupation, males and females of similar age and background were to share the same market characteristics, their respective quit rates could well be a lot closer than is typically depicted and might actually show female rates to be below those for male's. However, as we shall see later (Section 6.6), Shorey's findings can be criticised on a number of points.

The balance of the evidence suggests that females might, for one reason or another, have higher quit rates than males, and these reasons may well be sex-specific. Even then no satisfactory generalisations can be made regarding the difference between the two rates. Sex probably interacts with other variables such as age and length of service, and separately identifying these different aspects is a crucial element in the empirical analysis in Chapter 7.

Age

It is generally accepted that the age distribution of the

labour force is an important factor influencing the aggregate quit rate. This is in accordance with a number of studies that found quits to be a declining function of age; see for example Symes (1947), Young (1950), Rice et al. (1950), Long (1951), Greystoke et al. (1952), Parnes (1954), Silcock (1954), Behrend (1955), March and Simon (1958), Ross (1958), Gaudet (1960), Hedberg (1961, 1967), Bucklow (1963), Harris (1964), National Economic and Development Office (N.E.D.O.) (1967), Behman (1968), Wieland (1969), Goodman et al. (1973), Pettman (1973), Porter and Steers (1973), Anderson (1974), Price (1977), Mobley et al. (1979), Muchinsky and Tuttle (1979), Wanous (1980) and Mobley (1982). Parnes for example writes: "So universally has mobility been found to decline with advancing age that the relationship may be regarded as conclusively established" (p.102). And Price concludes his review of the literature on the subject: "There is little question but that age, like length of service, is negatively related to turnover" (p.29). Only Kitson (1925), Walker and Lumsden (1963), Knowles (1964a), Tavernier (1967) and Van Der Merwe and Miller (1973) find evidence to the contrary. Tavernier for example disagrees with the notion that turnover predominates among the young and reports that "a man of 50 is as liable to leave in his third year of service as a man of 25 in the same circumstances" (from Van Der Merwe and Miller (1971), p.248). So far however, his contention remains unproven, and it is generally agreed that proportionately fewer losses are recorded amongst older workers in all length of service categories than amongst younger workers.

Several reasons can be cited for the negative relationship

between age and turnover, the most common being that movement between jobs (and presumably between employers) might necessitate a loss in seniority and a relative loss in job security that often comes with increasing length of service. The loss of pension rights, higher pay and longer holidays that come with increasing length of service may also contribute to the observed negative relationship. Young workers on the other hand tend to be more mobile, having fewer financial commitments, fewer family responsibilities and greater job flexibility. As Behman (1968) comments:

> "It is not surprising .... to find that younger persons quit their jobs more readily than older persons; the young have at least two advantages over older workers: (a) they have little investment in a particular job; and (b) they have a longer horizon over which to amortise the cost of an unemployment period" (p.120).

Continuing on this theme Harris (1964) comments:

> "The young worker may change his mind on his choice of profession, decide to continue his education; he is less bound by family responsibilities, more adventurous in uprooting himself and travelling to a new area" (p.405).

Length of Service

It is hypothesised here that, as with age, the greater the length of service the lower the rate of turnover. Consequently, any study of turnover in a firm should find it to be very much concentrated among workers with low lengths of service. That is not to say that employees with long service do not leave. They do, but at a rate below that of workers recruited after them. From the outset, it is recognised that age and length of service are closely related: in the main, older employees tend to have longer lengths of service

than young employees. The distinction between the two however is important because employees of the same age are bound to differ as regards their lengths of service.

Numerous studies have been undertaken in an effort to establish the extent to which length of service affects turnover. One of the best known is that carried out by the Tavistock Institute of Human Relations, Rice, Hill and Trist (1950), into labour turnover in the Glacier Metal Company. They suggest that all groups of entrants must pass through three phases (or periods) after recruitment. First they identify "the period of induction crisis" generally lasting a few weeks, or sometimes months, during which time some employees leave the company in response to some sort of 'employment shock'. Second there is "the period of differential transit" during which time those employees who have successfully come through the first phase are coming to terms with the ways of the organisation. This phase can last anything from a few months to a few years. It is during this time that employees must decide how far their expectations differ from reality and whether they have a future in the organisation. Those who believe they do will, in all likelihood, stay at least some way into the third period. Those who perceive otherwise will either have to revise their expectations downwards or leave.

The third phase is termed "the period of settled connection". It is at this stage that those who have survived the first two periods begin to be considered established 'hard core' employees who, on the whole, will stay with the organisation

throughout the remainder of their working life.

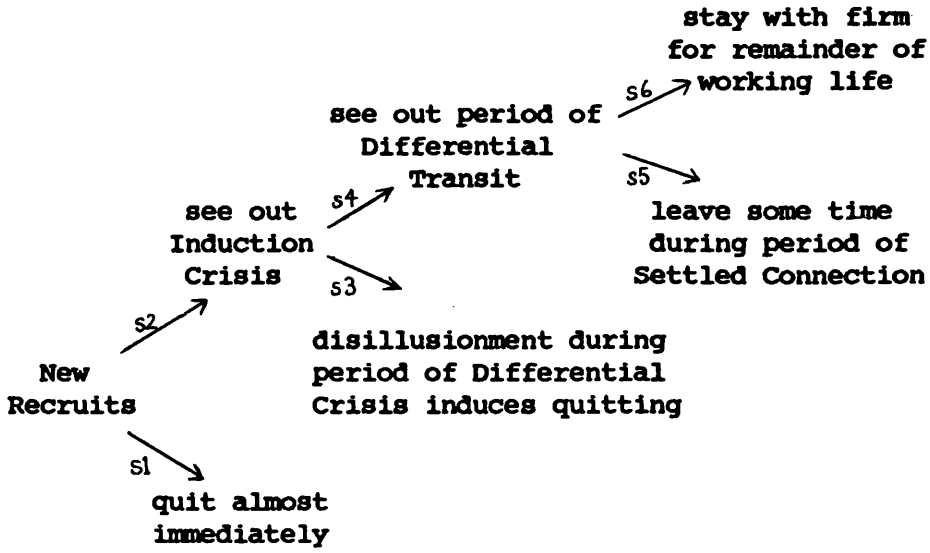
Rice and his colleagues refer to a "Social Process Theory of Labour Turnover" and this is represented diagramatically in Figure 6.2 (3). Analysis of this kind will be attempted in Chapter 11 where we will undertake a study of the quitting behaviour of groups of starters in Company A as we follow the organisation over a period of several years. Precisely where one period ends and another begins is hard to say, and is something else we shall consider in Chapter 11. Suffice to say that Rice et al. have provided a conceptual framework which proffers some explanation as to why turnover is negatively related to the duration of job tenure.

Other studies to confirm this negative relationship between length of service and turnover include Long (1951), Reynolds (1951), Greystoke et al. (1952), Silcock (1954), Ross (1958), Hedberg (1961, 1967), Knowles (1964), O.E.C.D. (1965), N.E.D.O. (1967), Stoikov and Raimon (1968), Lefkowitz (1971), Hill (1972), Fry (1973), Pettman (1973), Porter and Steers (1973), Anderson (1974), Price (1977) and Mobley (1982). Reynolds (1951) for example observed in a study of 850 New England manual workers during the years 1946-48:

> "the propensity to move declined sharply with increasing length of service .... Voluntary mobility is essentially a form of job shopping by workers .... Workers have great difficulty in judging the attractiveness of a job by talking it over in the company's employment office. The only way to judge it accurately is to work on it a while. After a few weeks or months of work, one can tell whether the job is worth keeping. This explains why quits are most frequent during the first few months of service and diminish rapidly after that point" (pp.21-22).

while Ross, in a highly acclaimed article on 'industrial feudalism'

Figure 6.2 Labour Turnover as a Social Process



Period:	Induction Crisis	Differential Crisis	Settled Connection

Hence we have (s1 + s2) = Period of Induction Crisis
(s3 + s4) = Period of Differential Transit
(s5 + S6) = Period of Settled Connection

where, for any 'entrant cohort'

s1 = workers leaving during period of induction crisis
s2 = workers still committed to the organisation
s3 = workers leaving during the period of differential transit
s4 = workers still commited to the organisation
s5 = workers leaving during period of settled connection
s6 = workers permanently committed to the organisation

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argued:

"Most workers who quit their jobs are young in years and low in service. They do not have enough seniority to keep them from changing jobs; they have typically not reached an age where retirement is a real element in their thinking ..... The older worker, on the other hand, is disinclined to change employment for a good many reasons even in the absence of seniority and fringe benefits - particularly the difficulty of securing another job, the probable loss of economic status, and his settled way of life generally" (pp.912-13).

More recently Price (1977) comments that because length of service is "very compatible" with various determinants of turnover such as pay "it is to be expected that members with short lengths of service will have high rates of turnover" (p.84). And Mobley (1982) notes: "Turnover is significantly higher for shorter-tenure employees" (p.97).

Finally, it is also important to consider the possible existence of a vicious circle regarding turnover. This can easily come about in firms where recruitment is high. Firms tend to recruit labour for two reasons - first to replace outgoing labour and second to help expand production when demand for its product(s) rise(s). In the case of replacement recruitment, the higher the turnover the greater the need to replace those leaving. So, for a given level of output and economic growth, a firm with a high rate of turnover in any given year (t) will, out of necessity, have a high recruitment rate the next year (t+1) just to maintain a constant workforce. The impact this will have on the firm's turnover rates that year and the following year (t+2) will be to give it high rates of turnover because, by its very nature, recruitment brings to the firm employees who in their first 12 months, say, have low lengths of service and are very prone to quitting. Hence, a firm finding itself in the unenviable position of having to undertake a great deal of recruitment to replace departing employees will, <u>ceteris paribus</u>, continue to have high rates of recruitment because those recruited will have low lengths of service and thus a greater tendency towards quitting. Once a firm finds itself locked into this 'high turnover = high recruitment = high turnover .....' circle, it is very hard to

break out. Our company studies, particularly for Company E (see Chapter 8) provide strong confirmation of this possibility.

Part-time Work and Married Women

Table 6.2 shows that there have been dramatic changes in the number of married women in employment since 1951. The proportion economically active in the 25-44 age group rose from 36.1% to 60.0%. All of this increase was due to increased participation by married women; their activity rate more than doubled, increasing from 25.1% in 1951 to 57.5% in 1977. The proportion economically active in the 45-64 age group rose from 28.7% to 55.9%. Such a change was brought about by a threefold increase in the activity rate of married females (from 19.0 to 55.2%) and a much smaller increase (from 50.5%

Table 6.2 Female Activity Rates, 1951-77 (*)

		Under 20(†)	20-24	25-44	45-64	65+
Total						
	1951	78.9	65.4	36.1	28.7	5.3
	1961	71.1	62.0	40.8	37.1	5.4
	1971	63.0	60.1	50.6	50.2	6.4
	1977	57.2	64.7	60.0	55.9	4.9
Married						
	1951	38.1	36.5	25.1	19.0	2.7
	1961	41.0	41.3	33.6	29.6	3.3
	1971	44.2	46.7	46.4	47.5	6.5
	1977	51.9	54.9	57.5	55.2	5.4
Non-married (††)						
	1951	80.7	91.0	81.2	50.5	6.6
	1961	73.2	89.4	84.2	57.4	6.5
	1971	65.6	81.2	80.4	58.7	6.3
	1977	57.7	76.7	78.7	57.8	4.3

(*) These rates are in percentages and exclude students.
(†) 15-19 for 1951 and 1961; 16-19 for 1971 and 1977.
(††) Women who are single, widowed or divorced.

Source: J.Jolly et al. (1980), p.67.

to 57.8%) in the activity rate for non-married females.

Much of this increase in the number of married women entering the workforce is associated with part-time work. Such work differs from seasonal work in that it is all-year round, and can be distinguished from full-time work by the lower number of hours worked (usually taken to be below 30 hours a week). The growing importance of part-time work has, according to Butler (1975):

> "..... a variety of causes. In particular, a labour shortage situation accompanied by almost static and even declining numbers in the male labour force, led employers to look to married women to fill vacancies and therefore made them willing to consider taking on part-time workers. Part-time workers were also found useful and economic to cope with peaks in workload. In conjunction with this there was a potential supply of married women. For domestic reasons married women are unable or unwilling to take on a full-time job but may nevertheless be willing to work on a part-time basis" (pp.9-11).

To date, the impact of marital status and/or part-time work on quit rates has tended to be neglected by researchers. However, when examining female quit rates, the proportion of married females working part-time in each industry must be taken into account to see if this factor is affecting the quitting behaviour. Precisely in what direction is a matter for conjecture. On the one hand the greater flexibility part-time work affords women might discourage high wastage rates. Yet, on the other hand, married women working part-time might have higher quit rates (and/or be less committed to employment) than full-time workers because of those reasons which prevent them working full-time in the first place. Furthermore, employers may be more willing to lay-off married part-time women in an attempt to adjust their labour force to changing (product) demand

conditions. Evidence on this is provided in the case study for Company E in Chapter 8.

6.3 Organisational Factors

The second category of factors to affect quits are organisational factors. These include skill mix, pay, plant size and whether an industry is expanding or contracting. Other organisational variables that might affect quits can also be listed such as job content and supervision. However, owing to the lack of data regarding these variables on an industry-wide basis we must exclude them from the empirical study.

Skill Mix

It is important to highlight the variations in quit behaviour among different types of workers. As Mobley (1982) writes:

> "Since the nature and technology of an organisation may dictate the use of differing occupational categories, it is potentially helpful to assess the relationship between occupational groupings and turnover rates" (p.92).

Much evidence has been produced to show that quit rates do vary according to skill levels, with unskilled workers typically depicted as having a greater propensity to quit than any other broad group of workers. Thus, Behrend (1955) commented that turnover "differs for different occupations, and is lower for skilled than unskilled workers" (p.62). Other writers too suggest a similar relationship between skill level and turnover. Long (1951), while studying turnover rates in nine British manufacturing firms employing some 66,000 workers concluded that, for male workers at least:

"Men on skilled work usually have the lowest turnover and those on unskilled work the highest, the turnover of semi-skilled workers usually lying between these two extremes" (p.80).

She believed the reason for this lay in the type of training workers receive. As an individual becomes increasingly more specialised (the result of firm-specific training), the number of perceived alternative employment opportunities outside his or her organisation decline. As March and Simon (1958) put it, while an individual with firm-specific skills may become "more and more indispensible to that organisation" s/he will, at the same time, become "more and more dispensible to other organisations" (p.102). Unskilled workers on the other hand receive general training, if that, making them potentially more mobile than workers with firm-specific skills.

A number of other reasons may be cited as to why skilled workers have lower turnover rates than semi- and unskilled workers. Firstly, workers at various skill levels will have differing degrees of loyalty to the company, with skilled workers perhaps displaying greater loyalty than semi- and unskilled workers, particularly where they have served an apprenticeship of up to five years. Secondly, internal career/promotion prospects will be better for some occupations than others. Skilled workers for example will often be promoted to foreman/supervisor and the technician level; semi- and unskilled workers, however, may find it much harder to undertake such meaningful occupational changes. Thirdly, workers tend to enjoy different degrees of job satisfaction depending on their work. Here then, with many semi- and unskilled jobs being highly repetitive and boring, a lot of workers cannot tolerate them for any substantial

period of time (we see this happening in Company E, Chapter 8). Workers in skilled occupations however are much less likely to face this problem. Finally, institutional factors such as pension schemes are only made available to certain categories of workers. Where skilled workers are in receipt of such perks, they are less likely to leave a company than are workers not sharing in such benefits including semi- and unskilled workers.

More recently Parsons (1972), using cross-sectional data for 47 three-digit manufacturing industries, found lay-off and quit rates to be negatively related to investments in firm-specific capital that were financed by both the worker and the organisation, while Young (1971) concluded his study of labour losses in "a large international company" as follows: "In every case I have studied, I have found what other investigators have found, that is, wastage decreases as skill and responsibility increase" (p.78). Other writers to find a similar relationship between the level of skill and turnover include Young (1950), Greystoke et al. (1952), Silcock (1954), Dewey (1960), Hedberg (1961), Oi (1962), Becker (1964), Harris (1964), Knowles (1964b), N.E.D.O. (1967), Stoikov and Raimon (1968), Oatey (1970), Pencavel (1970), Anderson (1974) and Price (1977).

Now, while the majority of studies into skill levels and turnover have found a significant negative relationship between them, there are a small number which conflict with this general finding. One of these, an empirical study of labour stability in two industrial establishments (one engineering, the other chemical) by

Hyman (1970) found that the longest serving group of workers in the chemical plant were not the more highly skilled craftsmen, but unskilled labourers. Another study finding little support for the skill-turnover generalisation, this time involving eight firms in the light-engineering industry (Ingham 1970), concluded:

> "the stability rate which refers to the proportion of long service workers (over 10 years) in the organisation in question ... failed to show any significant relationship ... for skilled and semi- skilled men respectively" (p.23).

So there is evidence to both support and refute the claim that the greater the level of skill the smaller the propensity to quit. The fact that the number of studies agreeing with the contention far exceeds the number disagreeing cannot be ignored. But we must resist the temptation to side with the majority purely on numerical grounds.

Wage

It is hypothesised that high wages are associated with lower quit rates. Numerous studies covering a wide range of workers have been carried out in the past to examine the relationship between wage levels and quit rates (Kerr 1947, March and Simon 1958, Ulman 1965, Burton and Parker 1969, MacKay et al. 1971, Armknecht and Early 1973, Hellriegel and White 1973, Price 1977, Dalton and Todor 1979). Armknecht and Early, in a detailed study of quit rates in the manufacturing industry between 1960 and 1971, found "by far the most important factor determining inter-industry variations in voluntary separations is the relative level of earnings" (p.34). And Price, after arguing that professional workers seem to place less emphasis

on wages than non-professional workers, concludes that wages are an important determinant of turnover for all workers.

There are some authors however who are unwilling to attach as much importance to the claim 'high wages reduce quits' as Armknecht and Early. One of the first to urge caution was Long (1951) who, in her study of turnover in nine firms and 80 factories, claimed:

> "higher earnings are not necessarily associated with a lower level of turnover. Wages are important and in any given situation, with certain types of employees and given physical and social conditions, an increase of wages by a single firm is likely to result in increased labour stability. The absence in certain firms of a close correlation between earnings and turnover shows, however, that other influences on turnover are as powerful as wages. When ways and means of reducing labour losses are considered attention should not be confined, therefore, solely to wages" (p.92) (4).

Others who share Long's reservations include Saleh, Lee and Prien (1965) who, in studying turnover among nurses, found no evidence that pay influenced turnover; only 2.3% of those nurses in their sample of 300 interviewed after quitting during a 15 month period gave wage dissatisfaction as a reason for quitting. Cook (1951) too finds "no direct relationship ..... between labour turnover and ..... wage levels" (p.5). In a discussion of labour turnover sparked off by the studies of the Tavistock Institute of Human Relations, Silcock (1954) also finds little support for the generalisation that pay was an important factor explaining a worker's decision to quit for he argues that if pay was that important:

> "we should expect the firm providing higher earnings to retain the labour it attracts. The movement of labour should be, to some extent, a one-way traffic from lower to higher earning

occupations. There is no evidence that this is so. The phenomenon of labour turnover is common to all firms investigated" (p.431).

In advising caution these authors are not refuting out of hand the claim that pay influences turnover, they simply believe there are grounds for it not to be considered the most important determinant of quit behaviour. In the light of this we might be well advised to accept Porter and Steer's (1973) conclusion that "pay .... often appears to represent a significant factor in the termination decision" (p.156).

So far we have been talking in aggregate terms, i.e. about turnover rates in the manufacturing industry as a whole and in some of its various sectors (inter-industry variations). Simply concentrating on the aggregate relationship between pay and turnover tells us little about individual turnover rates and even less about how we can predict it. For example, looking solely at the aggregate relationship would fail to highlight important differences between individuals regarding the importance attached to pay when compared to other factors such as personal satisfaction, job satisfaction, achievement, etc. Clearly, this is unavoidable when considering turnover rates in different sectors of the manufacturing industry, but it is something we must think about when undertaking a study of labour turnover in individual firms.

Overtime

Another important variable is overtime. It could be argued here that the greater the opportunity to work overtime, the lower the rate of turnover because workers dissatisfied with their wage for a

basic working week (taken as 40 hours) can increase their weekly pay by opting to work overtime. According to Silcock (1954): "The attraction of higher earnings (through overtime working) is probably greater for the lower paid than the higher paid worker" (p.431). He argues that the opportunity to work overtime in one firm but not another is often instrumental in some worker's decisions to defect from the latter to the former. We say 'some' because if one accepts that overtime is important (whether it be as a source of satisfaction or dissatisfaction) then we might accept Silcock's assertion that it tends to be the lower paid (and thus, more often than not, unskilled and semi-skilled workers) that are affected by it. But it can also be hypothesised that job dissatisfaction may be found where a worker feels the need to supplement his weekly income from a 40-hour working week by working overtime; the higher the amount of overtime, ceteris paribus, the higher the level of quitting. Which argument holds sway is uncertain. It is for us to investigate the relationship to see if support can be found for either.

Shift Work

The opportunity to work shifts is common in capital-intensive firms where employers are prepared to pay workers a premium to work unsocial hours so as to maintain continuous production and avoid disruption.

While some workers (mainly skilled and higher paid semi-skilled) are primarily concerned with wage rates (because it tends to be these that work a 'normal' week - i.e. five days, eight hours a day), unskilled and lower-skilled workers might seek employment in

firms where there are plenty of opportunities to work shifts. This was an argument put forward by Long (1951).

Equally persuasive however is the argument that a job requiring shift work might give rise to high levels of dissatisfaction so that workers obliged to work shifts might be more likely to leave a job in a firm with a normal 40-hour working week. Thus, according to Pettman (1973), "labour turnover is greater among workers on the night shift than among workers on the day shift" (p.46). A number of studies have found evidence to support this. Ley (1966) for example found mean monthly turnover rates among a sample of male production workers (5) working the third shift (12 p.m. to 8 a.m.) to be almost twice that of those working the first shift (8 a.m. to 4 p.m.) - 8.91% compared to 4.85% - while turnover rates for the second shift (4 p.m. to 12 p.m.) were closer to the third than the first shift at 7.67%. In a much earlier study, Brissenden and Frankel (1922) found that turnover in a manufacturing tool plant in 1916-19 among night shift workers was nearly three times that for workers on the day shift. In conclusion it would seem that the weight of evidence supports the positive correlation, i.e. that turnover will be greatest as the proportion working shifts increases.

Employment Growth

Chapter 5 referred to the considerable number of studies that have been conducted into the relationship between job turnover and the state of the economy as indexed by employment-unemployment levels. The empirical work in this chapter firmly established the importance of the inverse relationship between quit rates in

manufacturing and unemployment rates since 1948.

It is insufficient however to simply look at the relationship between total unemployment and the manufacturing quit rate. In Ross' (1958) words:

> "The difficulty with the ratio of unemployment is that it refers to the labour force as a whole, whereas the available quit rate data refer to manufacturing workers. There are strong reasons to believe that the manufacturing worker's opportunity to change his job is more closely related to employment conditions in manufacturing than those in the total economy" (pp.908-9).

Ideally, what is needed is some measure of the employment prospects in each sector. The number of males and females who are registered as unemployed is available by MLH. However, there are problems with such unemployment data (non-registration and recall/ classification difficulties) and the rate of employment growth is taken as a preferred indicator of how workers view future prospects in their industry. An industry with growing employment will offer a more secure future and/or a better chance of promotion, while an MLH with declining employment might prompt workers to move elsewhere in an effort to avoid redundancy. Thus, it is our contention that turnover is inversely related to employment growth with industries experiencing employment growth enjoying lower quit rates than industries with declining employment.

Size

The relationship between organisational size and labour turnover is one that has been studied in some detail over the years. As with many studies concerning potential influences on turnover, the findings have been conflicting. What needs to be be determined is

what type of factors motivate people who work in large and small plants. Some might prefer the intimacy of a small firm, while others might place more emphasis on the greater job security, higher wages and wider scope for internal changes and/or promotion that larger organisations are able to provide.

In a review of the literature Indik (1963), found that larger organisations in 21 out of 23 studies had lower attendance rates, higher absentee rates and greater termination rates than smaller firms. Undertaking a study of three sets of organisations himself two years later he found plant size and turnover to be positively correlated. This confirmed Cleland's (1955) findings from a study of 82 manufacturing plants that labour turnover tended to be lower in small factories than large ones (6).

In contrast, there exist a number of studies that believe the relationship between size and turnover to be negative (March and Simon 1958, Ross 1958, Dewey 1960, O.E.C.D. 1965, Hedberg 1967, and Azumi 1969). March and Simon for example argue that:

> "The larger the organisation, the greater the perceived possibility of intra-organisational transfer, and therefore, the less the perceived desirability of leaving the organisation" (p.99, their emphasis).

This notion of the 'perceived possibility of intra-organisational transfer' is one a number of writers believe is important. Thus Ross concludes:

> "It is well established that large firms tend to have low turnover rates, probably because of abundant opportunities for promotion and transfer" (p.914).

Moreover, larger firms tend to have better developed welfare provisions that make them more attractive to some workers, particularly those who are economically motivated. It might also be argued that larger organisations should have lower rates of turnover because they can expend greater time, money and effort in selecting the 'right type' of employee, namely a worker who will do a good job and will at least give some return over and above the cost of his recruitment and training.

However, there also exist a number of other studies that can find no significant relation between size and labour turnover (Cook 1951, Greystoke et al. 1952, the Acton Society Trust 1953 1957, Talacchi 1960, Knowles 1964b, Ingham 1967 1970, Stoikov and Raimon 1968, Pettman 1973 and Price 1977). Typical of all these studies is that by Ingham (1970). Studying turnover (and absenteeism) in eight firms of varying size, he argued that workers tend to be attached to different sized firms for a number of reasons. Those found in large plants, he claimed, tend to be more economically motivated, seeking jobs in larger firms because they tend to pay higher wages than small firms. Employees working in smaller plants on the other hand were seen to place less emphasis on the economic aspects of their job and more on non-economic aspects such as friendly and informal social relations, interesting work and proximity to home, which, according to Ingham, were much more evident in smaller firms.

All things considered then, the relationship between plant size and labour turnover is unclear. Other studies may be flawed because any observed influence of size on turnover might be via other

variables that vary according to plant size. We hope that the statistical analysis reported in the next chapter will avoid this problem by including a comprehensive list of possible explanatory variables.

Location

There may also be a regional/geographic dimension to quitting. In areas of high concentrations of manufacturing employment, for example within a major conurbation, workers will find it easier to change jobs because of plentiful alternative opportunities. Furthermore, greater regional and/or urban concentration facilitates the dissemination of information and lowers search costs. In addition, there can be marked differences in labour market pressure with some regions having low unemployment (which will promote job changing), and others having high unemployment (which should reduce labour mobility). The regional variation in quitting is an aspect that seems to have been neglected by earlier researchers.

6.4 Unquantifiable Variables

There are of course a number of other variables that might affect turnover. For example, some workers might be influenced in their decision to quit by work environment factors such as supervision and work-unit size. Also important are aspects of job satisfaction and whether the employee is a member of a trade union. However, all these aspects are unquantifiable in the context of undertaking a cross-section study using MLH data. Finally, we recognise that factors unique to each individual may also be relevant

in influencing quitting behaviour.

Supervision

Adequate supervision can play an important part in the socialisation of a new employee by providing assistance in an unfamiliar job and briefings regarding the new organisation. Such an approach may help to reduce quitting especially during the "induction crisis" (see Chapter 6.2, p.125).

Case studies clearly reveal that supervision is an important factor influencing turnover. A study by Hulin (1968) on turnover among clerical workers found dissatisfaction with supervision to be an important factor in leaving. A similar conclusion was reached by Saleh, Lee and Prien (1965) in their survey of turnover among nurses when they found 'lack of supervisory consideration' to be the second most important reason for leaving after job content. Other studies that find a negative relationship between satisfaction with supervisory relations and turnover include Fleishman and Harris (1962), Ley (1966), Skinner (1969) and Telly et al. (1971), all of whom studied quitting among production workers. However, the Taylor and Weiss (1969) study is one of the few that finds little or no relation between turnover and supervision.

Work Group Size

Another important factor in the socialisation process is the size of the work group and there is some evidence to suggest that a relationship between work unit size and turnover does exist. Investigating this relationship among 894 blue-collar factory workers Kerr, Koppelmeier and Sullivan (1951) found turnover to be positively

related to unit size. Similar conclusions were reached by Mandell (1956) in a study of clerical workers in 320 organisations, and in a study of factory workers by Indik and Seashore (1961). More recently Porter and Steers (1973) and Muchinsky and Tuttle (1979) have found some evidence that smaller work units tend to produce lower turnover rates, particularly among blue-collar workers. Once again however, evidence has been produced that finds no relationship between these two variables; see Argyle, Gardner and Cioffi (1958).

Job Satisfaction

A fairly strong and consistent relationship has been found in a number of different studies between job satisfaction and labour turnover. Kerr (1947) for example found turnover to be high among workers in jobs that were monotonous and involved low prestige and little chance of promotion. Ross and Zander (1957) established that:

> "the degree of satisfaction of certain personal needs supplied by a person's place of employment has a significant direct relationship to his continuing to work for that company" (p.61).

Aspects coming under the heading 'personal needs' include job autonomy, recognition, fair evaluation, the need to feel important and contact with management. Dissatisfaction with work has also been shown to be significantly related to turnover in a number of other studies including Brayfield and Crockett (1955), March and Simon (1958), Vroom (1964), Saleh et al. (1965), Katzell (1968), Telly et al. (1971), Waters and Roach (1971), Muchinsky and Tuttle (1979) and Mobley et al. (1979).

Task Repetitiveness, Job Autonomy and Responsibility

Porter and Steers (1973) reviewed the literature concerning the link between job characteristics and turnover. They found support for the contention that task repetitiveness and job routinisation are positively correlated to turnover (see Guest 1955, Lefkowitz and Katz 1969, Taylor and Weiss 1969 and Wild 1970), while job autonomy and individual responsibility lead to lower turnover in all the studies reviewed (Guest 1955, Ross and Zander 1957, Taylor and Weiss 1969, and Waters and Roach 1971). However, as Mobley (1982) points out:

> "..... we should heed Hulin and Blood (1968) and others who have persuasively argued that workers' responses to jobs content are a function of individual differences" (p.95).

Unionisation

Ideally we would also like to include a 'unionisation' variable in our regression. Generally it can be said that trade unions provide their members with a collective voice with which to negotiate better wage agreements, improvements in working conditions, deal with individual grievances, and so on. Consequently, the greater the extent of unionisation the lower might be the expected rate of quits. According to Wales (1970) for example:

> "In unionised industries ..... the individual may be replaced in the bargaining process by the union. When union demands are not met, the result is not mass quitting, but rather a strike. Consequently, one would expect that the more strongly unionised the industry, the lower would be the quit rate" (p.127).

Ross (1958) too argues that before unionism,

> "if the employee becomes unhappy enough, he could move off elsewhere. Under unionism this individualistic method of exhibiting and relieving discontent has been replaced by

concerted action, which can be involved without quitting jobs" (p.915).

Others to argue along similar lines include Stoikov and Raimon (1968), Burton and Parker (1969), Pencavel (1970) and Shorey (1980, 1983), with Pencavel also pointing out that: "Movement is further discouraged where openings are limited to union members" (p.13).

There are some who fail to find any evidence to support the above generalisation, Fry (1973) being a notable example, but with all things considered, we are prepared to accept that trade union membership does reduce quit rates. Insurmountable problems arise however as no data was available to measure the extent of unionisation in 1968. Even proxy variables such as 'the proportion of male manual workers whose wages were subject to collective agreement' (see Wabe and Leech 1978) have their difficulties. Despite using this variable while attempting to measure the affect union membership has on relative earnings in the U.K. manufacturing industry, Wabe and Leech remark on the following drawbacks:

"It overstates the level of trade union membership and the size of this discrepancy will vary between MLHs. It is also likely that the impact of union coverage varies for different types of agreement" (p.304).

Furthermore, the earliest recording of data regarding manual workers affected by collective agreements relates to the year 1973. Not only is this five years after our year of study, but it also only provides an observation for just over half the MLHs in manufacturing. Moreover, it is based on the 1968 Standard Industrial Classification while the data we have being using is based on the 1958

Classification. Difficulties such as these prevent the use of proxy variables for the extent of union membership in 1968. If however we assume that trade unions exert their greatest influence over wages and general working conditions, then we can take some comfort from the fact that we can measure directly the influence wages have on quit rates.

Individual Factors

Factors unique to the individual other than age, sex and job tenure also deserve consideration. Included here are education levels, personality, aptitude and ability, interests, and family commitments. At best, all these factors are only related to turnover at the margin. Highly educated workers are typically represented as having higher turnover rates than less educated employees, being more "cosmopolitan" (7) in their outlook than workers with low educational achievement (March and Simon 1958, Berg 1970, Katzell et al. 1971 and Pettman 1973). The relationship however is difficult to prove especially as most studies of turnover are based on samples containing workers with similar levels of education. What is more, the hypothesis that there is a positive relationship between education and turnover is weakened by the fact that it is inconsistent with the hypothesis that there is an inverse relationship between the level of skill and turnover.

A review of the research on turnover and personality by Porter and Steers (1973) seems to point to leavers as more highly aggressive, independent, self-confident and ambitious than stayers. Similar findings were made by Cleland and Peck (1959), Hakkinen and

Toivainen (1960), Meyer and Cuomo (1962), and Farris (1971). Given the extent to which some of these variables interact with organisational and work related factors however, precise measurement of the relationship between personality and turnover is extremely difficult.

Regarding the other factors mentioned, there is evidence to show that aptitude and ability and personal interests are all related to turnover, though research into these relationships is limited by lack of data. The little research that has been done on turnover and family commitments has found the relationship tends to be positive, particularly among females (Guest 1955, Minor 1958, Fleishman and Berniger 1960 and Saleh et al. 1965).

6.5 Review of Selected Empirical Studies

Having looked at a number of variables that might effect labour turnover, we now need to estimate their relevant importance. We can do this by carrying out a cross-sectional study of quit rates in the British manufacturing industry. Before doing this however, it is worth considering some studies that have tried to establish reasons for inter-industry variations in manufacturing quit rates. Below is a brief account of the studies of American data by Stoikov and Raimon (1968), Burton and Parker (1969), Pencavel (1970), Wales (1970), Telser (1971), Parsons (1972). All these American studies considered total (i.e. male plus female) quitting. Two British studies, Curran (1981) and Shorey (1983), are also considered.

Stoikov and Raimon (1968): They regressed quit rates for 52

industries in two years (1963 and 1966) against nine independent variables drawn from these and other years. While union occupancy rates (-), layoff rates (+), and the proportion of workers with job tenure of less than six months (+) all reached significance either at the 1% or 5% level in the 1963 regression, they failed to do so for 1966. Similarly, while average annual earnings (-), the proportionate increase in recent earnings (-) and the quality of the workforce (-) (8) attained significance at these levels in the 1966 regression, they failed to do so in 1963. No variable reached significance at the 5% level in both years. Stoikov and Raimon were also unable to identify any significant relationship between quitting and both the per cent black and the per cent female. As an alternative to the 'job tenure' variable, they ran a 'new hire rate' variable, and in both years it attained significance of the highest order (1% level), with the relationship being positive.

Burton and Parker (1969): They regressed a wide variety of variables against quit rates in 49 three-digit industries within the manufacturing sector for 1960. They categorised the 17 variables used under four headings: (a) incentive variables (wage levels and firm size); (b) variables subject to public control via policy making (unionisation and concentration); (c) dynamic variables including several incentive and opportunity variables that are "inter-related with the quit rate in a complex dynamic system" (p.208) such as wage change, accession rates, layoff rates, unemployment rate, and, as an alternative to wage levels and wage changes, earnings levels and earnings changes; and (d) structural variables such as the proportion of males, whites, production workers, skilled production workers,

Southern state employees, and rural employees in each industry.

Burton and Parker produce two sets of results; one based on unweighted observations, while the other relies on data weighted according to the size of employment in each industry. As our study does not weight any observations we shall confine our examination to their unweighted regression, and in particular Step 3 of the relevant table (Table 1, p.210) which excludes the dynamic group of variables whose close inter-relationship makes the identification of their influence extremely difficult. Surprisingly, their regression failed to find any significant relationship between quits and wage levels, and between quits and firm size. They did however find a significant negative relationship (1% level) between quits and the following independent variables: the concentration rate, the proportion of males in the labour force and the percentage of whites in employment. The relationship between quits and the proportion of skilled production workers in the workforce was found to be positive and significant (5% level). No significant relationship however could be identified between quits and the extent of unionisation, the proportion of production workers in the workforce, the proportion of workers from the South, and the percentage of workers living in rural areas.

Pencavel (1970): In an attempt to identify the reasons for inter-industry variations in quit rates, Pencavel regressed quits against a variety of cross-sectional variables from 49 industries in the manufacturing sector for the period 1959-60 (9). Of particular interest was his efforts to examine the effect occupational

structures might have on quit rates. To test for this he defined three occupational categories: the proportion of operatives and labourers in employment, the proportion of managers, salesmen, professional workers, and craftsmen in employment, and the proportion of craftsmen in employment. Regressing these separately with a number of other variables including the median wage and salary income (W), the extent of unionisation (U), the proportion of workers aged 29 and under (A), the ratio of female to male employment (F), accession rates lagged for one year (C), and the proportion of workers in large standard metropolitan statistical areas (SM), he found the variables W and U negatively related to quits at the 1% and 10% levels respectively (one-tailed test), while A, F, C and SM were found to be both positively and significantly related (one-tailed test) to quits (1% level for C and 5% level for A, F and SM). However, none of the occupational mix variables attained significance when included in the regression.

Wales (1970): He used a combination of cross-sectional and time-series data for 18 U.S. two-digit manufacturing industries for the period 1958-67 to "analyse the factors that influence quits both over time and across industries" (p.136). Wales found that quits were positively and significantly related to the fraction of employees aged 18 to 24 (1% level) and, at the 5% level, alternative employment opportunities and the extent of unionisation (10). The relationship between quits and wages on the other hand was both negative and (highly) significant, as were the relationships between quit rates and unemployment, quit rates and the ratio of females to total employees, and quit rates and the proportion of production workers.

Telser (1971): Telser sets out to explain the various components of turnover (quits, lay-offs and accession rates) among 99 four-digit SIC manufacturing industries in the period 1958-64. Running a separate regression for each component, he included the following variables in the quit equation: (a) the proportion of production workers in an industry (+); (b) the percentage change in the number of production workers' between 1958 and 1964 (+); (c) average hourly earnings of production workers (-); (d) average annual earnings of non-production workers (-); (e) average weekly hours per production worker (-); (f) the growth in total employment between 1958 and 1964 (+); and (g) product-market concentration (-).

He found the relationship between quits and the two income variables, and between quits and the average number of hours worked, to be negative and significant at the 1% level. The proportion of production workers in an industry was found to be positively related to quits, but only reached significance at the 5% level. The only other variable to achieve significance (1% level) was the concentration ratio; all the other variables showed the expected signs but failed to reach significance.

Parsons (1972): Testing the hypotheses that (a) quit rates were negatively related to "worker-owned" specific human capital and (b) lay-off rates were negatively related to "firm-owned" specific human capital, Parsons attempted to run regressions for quit rates and lay-off rates across 47 Census Bureau three-digit manufacturing industries in the years 1959 and 1963. Here we shall concentrate on his findings for quit rates only. He found that wages were

significantly negative at the 1% level in both years, while the proportion of workers in professional occupations is significantly positive in both years, at the 1% level in 1959 and the 5% level in 1963. This latter relationship indicates that professional workers are a highly mobile group. Parsons also found the industry concentration ratio and the percentage of white workers to be negatively related to quit rates in both years (1% and 5% levels respectively). The proportion of males under 25 years of age (+) attained significance at the 5% level in 1959, but not 1963. Variables found to be significant (10% level) in 1959 but not in 1963 include the percentage of managers in the workforce (-) and the proportion of employees living outside standard metropolitan statistical areas (-). The percentage of women in the labour force was found to be negatively related to the quit rate, achieving significance at the 10% level in 1963.

Curran (1981): In a cross-sectional study of male turnover in 89 MLHs in Britain in 1972, Curran attempted to regress the discharge rate and a variable she describes as "a pure quit rate" (p.208) against a number of variables in order to determine those variables exerting the greatest influence on turnover. Defining "a pure quit rate" as one that removes the lay-off element from the discharges (11), she argued that if engagements exceed discharges (i.e. employment is rising) "lay-offs will be minimal and the discharge rate will thus be an accurate reflection of quits" (p.205). If, on the other hand, discharges exceed engagements (i.e. employment is falling), she believed "a proportion of discharges may be lay-offs and the engagement rate may be a more accurate reflection of quits" (p.205).

As in a number of other studies, Curran found a significant inverse relationship between the wage variable and both the discharge rate and the pure quit rate (5% and 1% levels respectively). She also found the level of male unemployment to be positively and significantly related (1% level) to the discharge and true quit rates. Plant size had a highly significant (negative) impact on the pure quit rate but not on the dischage rate, suggesting that the advantages of working in a large organisation (including greater career prospects and internal transfers) outweigh the disadvantages such as lack of inter-personal relations. A number of other variables were introduced into the study but failed to reach significance. These included the percentage change in wages, fringe benefits, the average number of hours worked, the percentage of manual workers and a number of age variables.

The findings of the seven different cross-sectional studies reported above are summarised in Table 6.3, this approach being similar to that adopted by Parsons (1977). Clearly the table hides a number of variations in the specifications of the different variables, and it is important to realise that the magnitude and sign of each variable may be influenced by other variables included in each study. That said however, presenting the findings in this way provides a useful means of comparison.

Taking income first, we can see that the expected negative relation with quit rates holds in every study, attaining significance in all but two of them. Turning to the labour force variables however, while the brief job tenure coefficient displays

Table 6.3: Cross-Section Studies of Industry Quit Rates - Summary of Selected Studies (a)

Characteristics	Studies						
	1(b)	2	3(c)	4	5	6(d)	7(e)
A: Income	N	N	N**	N**	N**	N**	N**
B: Labour Force							
1.Quality	N	P*	-	-	-	P	-
2.Production Worker	-	N	P/N	N**	P*	-	N
3.Professional Worker	-	-	P	-	-	P**	-
4.Brief Tenure	P**	-	P**	-	-	P	-
C: Demographic							
1.Female	P	P**	P*	N**	-	N	-
2.Black	N	P**	-	-	-	P**	-
3.Youth	-	-	P*	P**	-	P*	P
D: Industry							
1.Size	N	N	-	-	-	-	N**
2.Unionisation	N*	N	N	P*	-	-	-
3.Concentration	-	N**	-	-	N**	N**	-
E: Rural Location	-	P	N*	-	-	N	-

Key to studies as follows:
1. Stoikov and Raimon (1968)
2. Burton and Parker (1969)
3. Pencavel (1970)
4. Wales (1970)
5. Telser (1971)
6. Parsons (1972)
7. Curran (1981)

Notational key: N = negative coefficient
P = positive coefficient
* = significant at α=.05, two-tailed test
** = significant at α=.01, two-tailed test

(a) A number of other variables were included in each study, but are not reported here.
(b) 1963 equation used here (Stoikov and Raimon, p.1294).
(c) Equations IIIA, IIIB and IIIC used here. Note that the relationship between the proportion of production workers in the labour force and quits was positive when the proportion of craftsmen in employment was measured, but was negative when the variable used was the proportion of operatives and labourers (p.33).
(d) 1959 quit rate equation used here (Parsons, p.1137).
(e) "ESTQUIT" equation used here (Curran, p.206).

the expected positive relationship with the quit rate, the impact of labour force composition on quitting is confused and no conclusions can be drawn about the relationship between the quality or composition of the labour force and turnover. It is contended that the treatment of labour force composition is a fundamental weakness in all these studies and is something that will provide a central feature in the empirical work in Chapter 7.

Ignoring race we see that the signs of the demographic variables tend to be positive. While the female coefficient reaches significance in three of the studies, it is only positive in two of them. The relationship between young age and quits is positive in all the studies reporting the relationship, attaining significance in three. For both variables then, it would seem that, ceteris paribus, industries with a greater than average proportion of young workers and females working in them will have higher than average quit rates.

Regarding the industry variables, it would appear that all three are negatively related to quitting, though to different degrees of significance. Neither size or the extent of unionisation however appear to exert as strong an influence on quit rates as product-market concentration, which is second only to income in terms of the strength and consistency of its relationship to turnover. Parsons (1977) suggests that this "reflects the immobilising effects of reduced competition for industry-specific skills" (p.210).

6.6 Shorey (1983) - Analysis of Quitting

This recent contribution is especially pertinent to the empirical analysis undertaken in the next chapter. It uses the same

data source, namely male and female turnover by MLH in 1968, and is concerned to "assess the importance of sex specific differences in quit rates" (p.213) using observations for 42 MLHs. Shorey introduced fourteen explanatory variables (including the constant term) into his study which suggests that he must have experienced a severe 'degrees of freedom' problem. The only significant variables in his full explanation of male quits were the mean level of wages across other industries in the same SIC order, the number of job openings on offer and the regional concentration (percentage of labour force employed in conurbations) of employment. These three variables, which were all positively related to the dependent variable, are not immediately obvious candidates as the crucial determinants of male quitting behaviour. The significant variables in his full explanation of female quitting were firm size and plant size. The former variable was inversely related to quits because of "specialised systematic labour relations machinery" (p.215) in large firms. Plant size was positively related to quits "because of the disutility to workers arising from the extensive division of labour and mechanisation in large units" (p.215). It is perplexing that these two inter-related variables (correlation coefficient of 0.98) should be the only ones to be significant in explaining female quits.

Shorey found the following average values across his 42 MLHs:

(a) an observed male quit rate per 100 workers per quarter of 2.77.

(b) an observed female quit rate per 100 workers per quarter of 3.78.

(c) a predicted female quit rate per 100 workers per quarter of 6.26 if female workers react to their market and personal characteristics as do males. This is computed by substituting the observed values for the female explanatory variables into the estimated equation for males.

(d) a predicted female quit rate per 100 workers per quarter of 1.39 if female workers were to have the same market and personal characteristics as male workers, but react as females do, not as males. This was computed by substituting the observed values for the male explanatory variables into the estimated equation for females.

(e) a predicted female quit rate per 100 workers per quarter of 1.04 if female workers were to have female personal characteristics (observed values for female personal variables) and male market characteristics (observed values for male market variables) but were to behave as females (using estimated equation for females).

However, Shorey makes an elementary mistake here when he fails to understand that his data refers to a four-week period, not a quarter of a year. Consequently, any reference to annual quit rates (see his article, p.219) are inaccurate because he multiplied by 4 rather than 13.

Shorey goes on to argue that when comparing a female quit rate of 1.39% (per four-week period) with one of 3.78%, it would appear that the market and personal characteristics of female workers do, ceteris paribus, "constitute a significant force increasing the female quit rate" (p.225). When comparing a rate of 1.04% with one of 1.39% however, female personal characteristics appear to reduce the female propensity to quit. The implication is that female market characteristics must increase female quits such that:

> "if women workers were to face the same market characteristics as men in terms of pay, access to large units, regional concentration, and so on, ceteris paribus, the female quit rate would by markedly smaller on average than it is (1.04 instead of 3.78) and thus significantly below the male quit rate"

(p.225).

He concludes his study thus:

> "The principal conclusion from our analysis is that there are sex specific differences in quit behaviour. The casual [sic] mechanisms behind the male and female quit decisions appear to be very different. Overall, however, this difference would lead to a lower quit rate for female workers, ceteris paribus ..... The empirical work conducted .... also suggests that personal characteristics variables are important to quits behaviour and that there is sufficient difference between the values of these for male and female workers to contribute to a difference in quit rates. On balance the affect ..... is again to reduce the female quit rate ..... In terms of explaining why the quit rate for female workers is above that for male workers, the important conclusion ..... is that it is the inferior market characteristics of female workers that dominate. In particular the lower wage paid to female labour significantly increases the female quit rate" (p.226, his emphasis).

Now, while there may be something in Shorey's argument, his journey into the world of 'what if .....' (what if females shared the same market characteristics as males, what if female workers reacted as male workers, and so on) is of little use without an adequate analysis of why market characteristics differ between the sexes. It is insufficient to say that if females faced "the same market characteristics as men in terms of pay ....." they would not quit as often as males, and certainly not as often as they do now. The fact is, their market characteristics are very different from those of male workers, mainly because their personal characteristics are so different.

The major difference between males and females lies in the substantial differences in their skill mix. It is nonsense to think in terms of the female response to male wage levels when this higher level of wages will be resulting from the considerably higher skill/

occupation level among male workers. There are also far more part-time women workers than men (about 20% of the total female workforce in fact) (12). Comparing male and female workers in the four broad occupational categories in the manufacturing sector in Table 6.4, we see that the proportion of female workers in the skilled category is only 19.1%, while the proportion of males is nearer 38%. Similarly, the proportion of semi-skilled female labour is twice as high as the male proportion (32.3% compared to 16.3%). It is only in the administrative, technical and clerical (13) and unskilled categories that the two proportions are alike, but as Table 6.5 shows, the majority of females in the non-manual category are clerical staff (86.2%), while a much smaller percentage of males (24.3%) can be found in this relatively low paying sector.

Now, according to Shorey, if females were to face the same market characteristics as men, their quit rates would be substantially lower than the male rate (1.04 compared with a male average of 2.77). It is our contention however that, with so many

Table 6.4: The Proportion of Males and Females in Broad Occupational Categories, U.K. Manufacturing Sector, May 1968

Broad Occupational Category	Males (%)	Females (%)
Administrative, etc.	25.2	28.3
Skilled	37.5 (*)	19.1 (*)
Semi-skilled	16.3	32.3
Unskilled	21.0	20.3
All occupations	100.0	100.0

(*) Includes some mainly semi-skilled workers in metal manufacture who cannot be separately identified.

Source: Employment and Productivity Gazette, Jan 1969.

Table 6.5: Male and Female Clerical Workers in the U.K. Manufacturing Industry, May 1968

Sex	Total Clerical workers (A)	Total Admin, etc. workers (B)	(A)/(B) (%)
Males	459,630	1,892,760	24.3
Females	789,300	916,130	86.2

Source: Employment and Productivity Gazette, Jan 1969.

females in low skilled jobs, it is unrealistic to talk in terms of them sharing the same market characteristics especially in terms of pay.

The crucial issue is whether, for any given occupation, female workers have higher quit rates than males. It could well be that females have higher turnover rates than males because workers in lower skill jobs have high rates of turnover regardless of sex. Shorey does introduce one dimension of the occupational structure, namely, the proportion of the labour force which is unskilled. However, his treatment is unsatisfactory and the approach adopted in the empirical analysis in the next chapter treats occupation and their associated quit rates as the core element in any explanation of inter-industry variations in turnover.

6.7 Footnotes

(1) The number in brackets after an industry is the MLH classification

(2) Barnes and Jones appear in both lists because while they find that more women quit the labour force than men, they also find that more men quit in search of a new job than women.

(3) Our analysis here is similar to that of Herbst (1963).

(4) It should be said here that there will be a certain amount of inter-correlation between the wage variable and some of the other variables affecting turnover; see the discussion of the wage variable in Chapter 7.1.

(5) When we talk of shift work affecting turnover rates we are really talking in terms of male rates because, by law, very few females are allowed to work shifts.

(6) Cleland however failed to produce data to show this.

(7) This was the term first used by Merton (1957) and expanded upon by Gouldner (1957-8).

(8) This variable was included in the study to measure the degree of specialisation in a workforce, or in their words the "richness of the skill-mix" (p.1290).

(9) Pencavel (1970) refers to an unpublished paper by Oi which considered average quit rates for 64 three-digit manufacturing industries over the period 1951-58. Oi found relative earnings among production workers and employment to be very important (together they accounted for 43% of the variation in quits), while the only other variables to approach significance were firm size and changes in employment.

(10) According to Wales however: "The extent to which unionisation results in a lower quit rate depends crucially on the level of unemployment. Increased unionisation results in a lower quit rate, but this effect diminishes as the labour market tightens. If the unemployment rate drops to approximately 3.4 per cent the decision to quit is no longer influenced by the degree of unionisation in the industry" (p.136).

(11) We have already seen in Chapter 4.2 how Department of Employment estimates fail to distinguish between quits and lay-offs.

(12) Female unemployment in 1968 was comparatively low (about 1%), thus pre-empting the claim that women may have been forced into part-time employment, as opposed to full-time.

(13) Shorey says his study uses data "for female manual labour in U.K. manufacturing industry" (p.216). However, the turnover

data refers to the total female labour force of whom an average of 28.3% are non-manual.

Chapter 7 Cross-Section Analysis of Quit Rates

As we have already seen, important differences in quit rates can occur according to sex, age, length of service, occupation, wage, plant size, regional/urban concentration, etc. But just how important each of these factors are in determining quit rates remains to be seen. It is our intention in this chapter to determine the way in which a number of variables might affect quit rates in the manufacturing industry, as well as trying to establish their relative importance. To do this we undertake a cross-sectional analysis of male and female quit rates (separately) in the British manufacturing industry in 1968 for 104 MLHs. In both cases, the quit rate chosen was the sum of the four quit rates in that year (as reported by the Department of Employment) multiplied by 3.25 to give an average annual quit rate for each MLH.

This chapter is divided into three sections. First, there will be an outline of the model and a discussion of the variables included in the study. This is followed by a presentation of the results as featured in Tables 7.1 and 7.2. The final section adopts an analytical approach, and assesses the relative influence individual explanatory variables have on quit rates.

7.1 The Model and Variables Used in the Analysis

A number of different variables are included in the study and a discussion of each is contained below. The source of these variables is given in the Appendix to this chapter.

Skill Mix: It is hypothesised that workers in different occupational

or skill categories have inherently different quit rates. Using MLH data, it is possible to subdivide the total labour force, for both males and females, into the following four proportions:

(a) administrative, technical and clerical (ADM)
(b) skilled (SK)
(c) semi-skilled (SSK)
(d) unskilled (USK).

If each broad occupational category has its own different annual percentage quit rate ($\alpha_1 \ldots\ldots \alpha_4$) then the annual quit rate for males in MLH_j will be:

$$Q(m)_j = (\alpha_1 ADM_j + \alpha_2 SK_j + \alpha_3 SSK_j + \alpha_4 USK_j) \qquad (1)$$

In the female case however, because the proportion of skilled females in the manufacturing sector is so small (skilled female workers accounted for less than 5% of the female labour force in 58 MLHs and the average value for this variable was only 0.14) it was decided to add the skilled and semi-skilled proportions together to give the variable SKSS. The level of female quits is taken to be:

$$Q(f)_j = (\gamma_1 ADM_j + \gamma_2 SKSS_j + \gamma_3 USK_j) \qquad (2)$$

where $\gamma_1 \ldots\ldots \gamma_3$ represent the quit rates for the three female occupations.

There are, however, a considerable number of other factors that influence the quit rate in a particular MLH and it is postulated that each factor acts in a multiplicative way to increase or decrease the basic occupation determined quit rate. Thus, the following non-linear equation is taken for the male quit rate:

$$Q(m)_j = (\alpha_1 ADM_j + \alpha_2 SK_j + \alpha_3 SSK_j + \alpha_4 USK_j) \prod_i (1 + \beta_i N_{ij}) \qquad (3)$$

where N_{ij} is the value of the ith variable (these are discussed below) in the jth MLH. There is a similar equation with more or less identical variables for females.

Earnings: An MLH with high average earnings, ceteris paribus, will be expected to have a lower level of quitting than a low paying sector. The earnings variable is introduced by taking the average wage in the jth MLH ($\bar{W}_j$) as a proportionate deviation from £993, the average wage across the 104 MLHs (1). Thus, we have the following relationship for the earnings variable:

$$N_1 = W_j = (\bar{W}_j - 993) / 993$$

The multiplicative term for wages has no impact on quitting when the MLH average is equal to the overall average of £993. If, however, the MLH average was £1396 as it was in Printing and Publishing (486), then $W_j = 0.41$ and, if $\beta_1 = -0.50$, then the above average earnings will reduce the occupation quit rates in this industry by 21%.

Age: It is considered that quitting will be high among young workers and low among older employees. After considering several different age ranges, (including 15-19, 20-24, 15-24, 25-44, 45-54 and 55 years or more), the best results for both sexes were found when the proportion of older workers aged 55 and over ($N_2 = A_j$) was included in the regression. It is expected that β_2 will be negative.

Employment Growth: It is important to include in the regression a variable that shows how workers perceive the future economic

prospects of their industry. Earlier it was argued that an important factor in convincing workers of the well-being of an industry was whether employment was expanding or not. Hence, it is postulated here that:

$$N_3 = EG_j = (E_j^t - E_j^{t-1}) / E_j^{t-1}$$

where EG_j is the difference in the number employed in the jth MLH over one year expressed as a proportion of the number employed one year earlier. It is expected that β_3 will be negative. Clearly this term has no impact on quit rates when $E_j^t = E_j^{t-1}$, i.e. when there is no employment growth.

Accession Rate: An attempt was made to identify workers with low lengths of service in order to assess the effect they might have on an industry's quit rates. To do this we included two length of service variables in the regression, one showing those workers who joined an industry within the last 12 months ($N_4 = AR_{1j}$), the other showing the number joining 13 to 24 months ago ($N_5 = AR_{2j}$). So that we might assess the effect the most recent recruiting might have on quit rates, we decided to let the first period overlap with the first half of 1968. For only then could we hope to include in the analysis the effect low lengths of service have on turnover during what Rice et al. (1950) termed the "induction crisis". The variables used to indicate low lengths of service were thus the accession rates for the 1967-68 and 1966-67. It is expected that both coefficients will be positive and that β_4 will be greater than β_5.

Overtime: This variable only applies to male workers and is taken to

be the number of hours worked in excess of the 'norm' of 40 hours. Thus:

$$N_6 = OV_j = H_j - 40$$

where H_j is the average number of hours worked per week in the jth industry. The value of H_j is always in excess of 40, it being lowest at 0.8 hours in Footwear (450) and greatest at 10.4 hours in Grain Milling (211). The greater the level of overtime, ceteris paribus, the higher is the expected level of quitting. Thus β_6, the proportionate affect on quit rates for every hour of overtime, is expected to be positive.

Plant Size: Here we are concerned with establishments with more than 25 employees and we shall treat plant size in the same way as earnings and hypothesise that the proportionate change in occupational quit rates is a constant fraction of the proportionate deviation in plant size from its average value. Hence we have:

$$N_7 = PS_j = (\overline{PS}_j - 290) / 290$$

where 290 is the (unweighted) average value of plant size across the 104 MLHs.

Average plant size can vary widely between the various MLHs. The value of PS_j exceeded 500 in 13 MLHs, surpassing 1000 in only two of them (1550 in Production of Man-made Fibres (411) and 1017 in Aircraft Manufacturing and Repairing (383)). At the other extreme, PS_j fell below 100 in 15 MLHs with the lowest values being 64 in Wooden Containers and Baskets (475) and 68 in both Lace (418) and

Fur (433). The nature of the relationship between plant size and quitting was discussed in Chapter 6.3. This showed that β_7 could be either positive or negative.

Shift Work: There are many establishments in the manufacturing sector that require (manual) workers to work shifts, i.e. to work irregular hours in order to maintain production 24 hours a day. Taking the year 1964 (this was the closest possible date to 1968 for which such data was available), the proportion of manual male workers working shifts ($N_8 = SW_j$) varied considerably among the different industries. While no shift working was required in only 6 MLHs and hardly any (5% or less) in a further 21, the number of MLHs requiring a high proportion of men employed on shift work systems (say, 30% or more) was 20. Four industries employed more than half their male workforce on shifts, namely Synthetic Resins and Plastic Materials (276) with 54%, Sugar (216) with 57%, Coke Ovens and Manufactured Fuel (261) with 59%, and Production of Man-made Fibres (411) also with 59%.

Shift work is clearly inconvenient and causes disruption to the individual and, as a result, such employment can command a premium payment above the normal wage rate. It was accepted (see discussion in Chapter 6.3) that shift working might influence quitting but it was unclear whether we should expect β_8 to be positive or negative. The shift work variable is only used in the regression concerning male quits as females tend not to be employed on shift working systems.

Location: There is considerable variation in the extent to which MLH

employment (both male and female) is concentrated in regions that display the greatest labour market pressure. In 1968 the four regions London and the South East, East Anglia, West Midlands, and East Midlands all had unemployment rates which were considerably below the national average and the proportion of the MLH labour force in these four regions ($N_9 = SEAM_j$) is introduced as an explanatory variable. This variable for male workers exceeds 0.60 in 30 MLHs and is less than 0.20 in 10 others. It is expected that high labour market pressure increases quitting, that is β_9 is expected to be positive.

The proportion of the total labour force concentrated in the seven major conurbations of Greater London, the West Midlands, Merseyside, Tyneside, South East Lancashire, West Yorkshire, and Central Clydeside ($N_{10} = CON_j$) is taken as an alternative to the variable $SEAM_j$. This variable presupposes that workers in conurbations have greater scope for moving between jobs and are thus more likely to quit their employment.

Married and Part-Time Women: Among females there could well be differences in quitting behaviour between married and single women and between those who work full-time and part-time. Consequently, we include in the female regression a variable that measures the proportion of women in employment that are both married and work part-time ($N_{11} = MRPT_j$). Almost all part-time female workers will be married and they will choose this status because of their family commitments. This category of female labour is of condsiderable importance as the value of $MRPT_j$ in 1968 exceeded 0.20 in 56 MLHs, rising to 0.30 in 8 of them, and never fell below 0.10. Interest

centres on the sign of this coefficient as, on a priori grounds, we cannot be sure whether this type of female labour will have a higher or a lower quit rate than other female employees.

7.2 The Results

The results are derived from estimating equations which are in the form of Equation 3 above. This is a non-linear equation and it is estimated using the iterative procedure in the T.S.P. Package (2). The results for males are presented in Table 7.1. Clearly, with so many explanatory variables there are a huge number of possible permutations of the results. Without doubt, the most dramatic improvements in R^2 occured when wage levels (compare Equations 2 and 1) and length of service (compare Equations 5 and 4) are added to the explanation. The discussion of our findings will concentrate on Equation 7, this being the full explanation using all the defined variables.

We see from Equation 7 then that, with the exception of plant size, shift work and regional concentration, all the variables are significantly different from zero at the usual 5% significance level (3). The variables in the model explain 89.3% of the variation in quitting across the 104 MLHs. Concentrating on the occupational variables first, we note that the highest quitting occurs among semi-skilled males. It is interesting, and perhaps surprising, to see that the lowest quitting is among unskilled workers, who exhibit an annual quit rate of 9.90%. The wage rate is highly significant, with the value -0.37 suggesting that if wages are 10% above average then quit rates will be reduced by 3.7% (this is significantly lower than

Table 7.1: Explanation for Variations in Male Manufacturing Quit Rates in Great Britain, 1968 (*)

Var.	Equation 1	2	3	4	5	6	7	8
ADM	10.30	13.65	13.31	13.53	9.10	9.88	11.91	10.52
	(9.36)	(7.07)	(8.18)	(8.57)	(1.63)	(1.59)	(2.23)	(1.80)
SK	33.27	24.77	31.23	32.58	10.36	11.18	12.59	11.39
	(5.49)	(4.02)	(6.48)	(6.58)	(1.88)	(1.70)	(2.07)	(1.77)
SSK	17.62	28.73	33.62	37.21	13.91	14.70	15.02	14.22
	(9.00)	(6.68)	(8.58)	(9.07)	(2.32)	(2.19)	(2.35)	(2.33)
USK	69.38	60.66	70.99	74.60	9.76	9.86	9.90	9.33
	(8.94)	(6.95)	(10.38)	(10.58)	(2.09)	(2.01)	(2.14)	(2.06)
W	—	-1.20	-1.29	-1.36	-0.23	-0.34	-0.37	-0.38
		(0.16)	(0.18)	(0.18)	(0.10)	(0.11)	(0.12)	(0.12)
A	—	—	-0.71	-0.91	-0.42	-0.41	-0.52	-0.43
			(0.40)	(0.36)	(0.24)	(0.23)	(0.23)	(0.24)
EG	—	—	—	-1.15	-1.96	-1.93	-1.83	-1.93
				(0.62)	(0.29)	(0.28)	(0.30)	(0.29)
AR_1	—	—	—	—	4.95	3.62	3.47	3.69
					(1.89)	(1.43)	(1.37)	(1.49)
AR_2	—	—	—	—	1.01	1.08	1.07	1.03
					(0.47)	(0.52)	(0.52)	(0.50)
OV	—	—	—	—	—	0.016	0.015	0.016
						(0.008)	(0.008)	(0.008)
PS	—	—	—	—	—	-0.030	-0.041	-0.038
						(0.021)	(0.021)	(0.022)
SW	—	—	—	—	—	—	0.096	0.104
							(0.135)	(0.141)
SEAM	—	—	—	—	—	—	-0.097	—
							(0.064)	
CON	—	—	—	—	—	—	—	-0.035
								(0.071)
R^2	0.149	0.481	0.493	0.510	0.884	0.891	0.893	0.892

(*) Standard Errors in brackets.

Shorey's (1983) estimate of -1.23 for this elasticity). Like the wage variable, the inverse relationship between the age coefficient and the various male quit rates is also significant; workers aged 55 or more have a quit rate which is about half (52%) that for other workers. The quit rate also appears to be highly responsive to changes in total employment such that an MLH with declining employment of 5%, say, will have a male quit rate that is some 9% higher than an industry with a constant male labour force. The two length of service variables are of crucial importance. Male workers who joined an industry in the last 12 months have a quit rate that is 4.47 times greater than that experienced by long service workers. That is, new workers will have an annual quit rate of 55.74% compared to an average quit rate of 12.47% for core workers (see Table 7.3). Workers with between 1 and 2 years' service also have a quit rate that is higher than that for core workers, in this case double that experienced by long serving employees. The hours of work variable indicates that each hour of overtime increases the quit rate by 1.5%. Finally, the coefficient on plant size is almost significant (t value -1.95). The evidence here therefore suggests that male quit rates are lower in larger factories, although the numerical impact is small; ceteris paribus, a doubling of plant size would only lead to a 4% reduction in turnover.

The addition of the shift work and regional concentration variables adds little to the value of R^2 and both these coefficients fail to reach significance. It is in fact surprising to note that the coefficient on SEAM is negative suggesting that MLHs concentrated in the Midlands, East Anglia and the South East have lower quit rates

than industries concentrated elsewhere. Substituting urban concentration (Equation 8) for regional concentration makes no effective difference to the results.

The results for females are presented in Table 7.2. Once again, we see that the most dramatic improvements in R^2 take place when wage levels and length of service are added to the regressions. That said however, the addition of the wage variable does not have the same impact as in the male case.

The discussion of the female results will concentrate on Equation 14. The coefficients suggest that there is very little difference in female occupational quit rates; all female occupations seem to have a quit rate of around 17%. Moreover, the wage coefficient at -0.22 is significantly less than zero (one-tail test), suggesting an elasticity which is considerably lower than the -1.71 estimate made by Shorey (1983). Unlike in the male case however, the age variable fails to reach significance at the 5% level. Contrast this with the two length of service variables which are clearly important in both a statistical and numerical sense. Females with less than 12 months' service have a quit rate that is 3.24 times higher than that of core females. We also see that females with 13-24 months' service have quit rates that are double those for more established workers. Thus, while the annual quit rate for core female employees was 17.37% (see Table 7.4), new workers had a quit rate of 56.28%, and those with between 1 and 2 years' service one of 34.05%.

The female quit rate also appears to be responsive to

Table 7.2: Explanation for Variation in Female Manufacturing Quit Rates in Great Britain, 1968 (*)

	Equations						
Var.	9	10	11	12	13	14	15
ADM	19.79	31.89	36.58	36.65	16.66	17.00	16.62
	(3.64)	(4.93)	(5.47)	(5.74)	(1.99)	(2.20)	(2.25)
SKSS	47.84	36.55	45.42	45.23	17.59	17.91	17.59
	(2.75)	(3.24)	(4.43)	(4.53)	(2.23)	(2.51)	(2.64)
USK	82.95	77.36	94.65	94.21	15.76	16.96	15.42
	(6.60)	(6.18)	(8.54)	(8.82)	(2.94)	(3.34)	(3.21)
W	—	-0.77	-0.87	-0.88	-0.18	-0.22	-0.15
		(0.20)	(0.19)	(0.19)	(0.12)	(0.13)	(0.13)
A	—	—	-1.27	-1.26	-0.39	-0.37	-0.41
			(0.30)	(0.32)	(0.27)	(0.31)	(0.30)
EG	—	—	—	0.09	-0.66	-0.68	-0.77
				(0.46)	(0.29)	(0.31)	(0.30)
AR_1	—	—	—	—	2.12	2.24	2.68
					(0.77)	(0.84)	(1.01)
AR_2	—	—	—	—	0.97	0.96	0.91
					(0.39)	(0.40)	(0.37)
PS	—	—	—	—	—	-0.012	-0.016
						(0.017)	(0.016)
MRPT	—	—	—	—	—	-0.30	-0.13
						(0.21)	(0.22)
SEAM	—	—	—	—	—	0.009	—
						(0.059)	
CON	—	—	—	—	—	—	-0.146
							(0.060)
R^2	0.358	0.450	0.508	0.508	0.845	0.849	0.857

(*) Standard Errors in brackets.

employment growth. Here, for example, a decline of 5% in female employment will increase the female quit rate in an MLH by 3.4% above

that of an industry with a constant female workforce.

The remaining variables in the regression add very little to the explanation. The proportion of married women working part-time in the manufactuing industry does not have a significant impact on quit rates. It is interesting to note that this coefficient is negative, that is, there is some evidence that part-time married women have lower quit rates than other female employees. Plant size and regional concentration are clearly insignificant. However, urban concentration (see Equation 15) is significant. Here we see that MLHs concentrated in the seven conurbations have lower quit rates than industries located elsewhere.

The empirical results derived from this cross-sectional study of male and female quit rates in the manufacturing industry then give us a greater insight into why men and women quit their jobs. However, the model has some important limitations that are worth noting. Ideally we would have liked to have sub-divided the 'administrative technical and clerical' category into 'clerical' and 'other' workers. Only then could we have made meaningful comparisons between male and female quitting among non-manual workers. As it is, with important differences occuring in the composition of this group when broken down by sex, we cannot place too much emphasis on our findings that female quitting in this occupation is greater than male quitting. Contrast this with the manual category where a comparison of 'like with like' does allow us to conclude that female quit rates are 30% higher than male quit rates. In particular, the female quit rate for unskilled (16.96%) is some 70% greater than the

comparable rate for males (9.90%).

An additional limitation to our study is that the impact of various multiplicative terms on occupational quit rates may vary between occupations. The impact of age in reducing quit rates for example may be more pronounced for non-manual workers than for manual. Moreover, variations in occupational quit rates are also likely to be related to other age groups not included in the regression. We would also expect the impact of the short length of service variables (less than 13 months and 13-24 months) to vary for different occupations and/or skill levels. With so few observations however, it would be difficult to identify all these different effects.

Despite the drawbacks however, some important conclusions can be drawn from the study and a number of policy recommendations made. Quit rates for females do appear to be higher than those for males. Yet, while there are important inter-occupational variations in male quit rates, female quitting seems to be fairly constant across the broad occupational categories. Quit rates also appear to be dramatically higher for new recruits than longer serving workers, irrespective of sex. Furthermore, we see that the response of quitting to changes in wage levels is highly inelastic. Increasing wages by 10% for example will decrease male quitting by 3.7% (Equation 7) and female quitting by 2.2% (Equation 14). Thus firms will find it extremely difficult to 'buy' their way out of a high quitting situation. Once locked into a vicious circle of high turnover/high recruitment then companies will have to resort to some

other device to try and reduce turnover.

7.3 The Relative Importance of Explanatory Variables in Contributing to MLH Quit Rates

We are now ready to take on a more analytical discussion of our findings, placing particular emphasis on the results presented in Tables 7.3 and 7.4 which tell us, ceteris paribus, the effect changes in the value of each variable might have on quit rates.

Column 2 of Table 7.3 reproduces the male coefficients from Equation 7 of Table 7.1 while column 3 lists each variable's mean value. This enables us to derive the contribution each variable makes to the quit rate at the average (column 4). For example, taking the four occupational categories on their own gives us a quit rate of 12.47%, which is the average level of quitting when the value of all other explanatory variables is zero (i.e. at the average wage, when there are no short service employees, constant employment, no overtime, etc.). In the previous section this 12.47% was refered to as the core quit rate. Introducing the 21% of workers who are over 55 for example reduces this average by (0.891) (12.47) to 11.11%. The impact of short service is to increase it by 2.81, i.e. (2.11) (1.33). The combined effect of all these multiplicative terms then increases the core quit rate by 2.63. This gives a predicted quit rate at the mean value of all variables of 32.77%.

We then decided to assess the impact on quit rates of a change from the average value of each independent variable to a feasible extreme value. Column 5 shows twice the standard deviation, few observations for any variable lying beyond this value, while

Table 7.3: Sensitivity of Male Manufacturing Quit Rates to Changes in Dependent Variables

Var.	Coeff. (*)	Mean	Contribn to Q.R. at the mean	2 SDs.	Contribn to Q.R. at mean + 2 SDs	Relative effect of 2 SDs
ADM	11.91	0.25	2.98	-	-	-
SK	12.59	0.35	4.41	-	-	-
SSK	15.02	0.18	2.70	-	-	-
USK	9.90	0.24	2.38	-	-	-
		1.00	12.47			
W	-0.37	0.0	1.00	0.372	0.862	0.862
A	-0.52	0.21	0.891	0.096	0.841	0.944
EG	-1.83	0.003	0.995	0.080	0.848	0.852
AR_1	3.47	0.32	2.11	0.234	2.922	1.385
AR_2	1.07	0.31	1.33	0.226	1.574	1.183
OV	0.015	5.84	1.09	4.100	1.149	1.054
PS	-0.041	0.0	1.00	1.693	0.931	0.931
SW	0.096	0.16	1.02	0.293	1.043	1.023
SEAM	-0.097	0.52	0.95	0.388	0.912	0.960
			32.77			

(*) Coefficients taken from Equation 7, Table 7.1.

column 6 shows the contribution to the quit rate for a value of each dependent variable which is two standard deviations greater than its mean value. For example, if the proportion aged 55 and over is 0.306, then this variable will change the quit rate by 0.841. Thus,

increasing the proportion of older workers from 0.21 to 0.306 will, *ceteris paribus*, reduce the quit rate by 5.6% (0.841/0.891 = 0.944). This number is given in the final column and it shows the relative effect each variable has on quits when increased by two standard deviations from its mean value, keeping all other factors constant.

Increasing wages by 37.2% from the mean of £993 can be expected to produce a 14% fall in quit rates. Employment growth has a similar influence on quits. An industry with an 8% growth in its employment can expect quit rates to be substantially below the manufacturing average, 15% in fact. Quitting is most responsive to changes in the two length of service variables. An increase in the proportion of workers with less than 13 months' service (AR_1) from 0.32 to 0.55 will increase the quit rate by 38.5%. However, a comparable increase in the proportion with 13-24 months' service (from 0.31 to 0.53) will result in an 18% increase in quitting. Moving two standard deviations above the mean for the overtime variable increases quitting by 5.4%, while a similar change in terms of plant size reduces quits by 6.9%.

Clearly then, we can immediately highlight those variables influencing male quit rates most. Without doubt, the two length of service variables are of paramount importance, particularly that relating to those recruited in the last year. This confirms our earlier hypothesis that low lengths of service produce high rates of labour wastage. Firms experiencing high rates of turnover have to maintain high levels of recruitment if they want to replace those workers who quit (mainly low service ones). Once locked into this

vicious circle, firms find it extremely difficult to break out.

Employment growth and wages also appear to be important variables affecting quits. Both are negatively related to quits (as is to be expected), and the computations in Table 7.3 confirm our findings in Table 7.1. Equally important are our findings that quit rates do not appear to decline with increasing levels of skill. Rather than skilled and semi-skilled workers having lower quit rates than unskilled workers, it would seem as though skilled workers have a greater degree of flexibility (one possibly afforded by their greater training and education) which allows them greater external mobility. Unskilled workers on the other hand appear to quit less than workers in the other occupational categories, one explanation possibly being that unskilled workers prefer internal mobility to external mobility, particularly when employed in larger firms. Our findings here then are similar to those of Hyman (1970) who found unskilled workers exhibited greater long term stability than skilled and semi-skilled workers. This is something we shall study in greater detail in Chapters 8-11.

A similar analysis for females is presented in Table 7.4 which reproduces the female coefficients from Equation 14 of Table 7.2. When the effect of all explanatory variables apart from the occupational mix is zero, quitting among female core workers is 17.37%. Introducing the proportion of females aged 55 or more (14%) reduces this average by 0.052 to 16.47%. The impact of short service is to increase it by 2.88, i.e. (2.03) (1.42), to 50.0%.

Assessing the influence on female quit rates of a change

Table 7.4: Sensitivity of Female Manufacturing Quit Rates to Changes in Dependent Variables

Var.	Coeff. (*)	Mean	Contribn to Q.R. at the mean	2 SDs.	Contribn to Q.R. at mean + 2 SDs	Relative effect of 2 SDs
ADM	17.00	0.35	5.95	-	-	-
SKSS	17.91	0.42	7.52	-	-	-
USK	16.96	0.23	3.90	-	-	-
		1.00	17.37			
W	-0.22	0.0	1.00	0.372	0.918	0.918
A	-0.37	0.14	0.948	0.084	0.917	0.967
EG	-0.68	-0.002	1.001	0.084	0.944	0.943
AR_1	2.24	0.46	2.03	0.254	2.599	1.280
AR_2	0.96	0.44	1.42	0.254	1.664	1.172
PS	-0.012	0.0	1.00	1.692	0.980	0.980
MRPT	-0.30	0.21	0.937	0.118	0.902	0.963
SEAM	0.009	0.43	1.004	0.344	1.007	1.003
			44.70			

(*) Coefficients taken from Equation 14, Table 7.2.

from the average value of each independent variable by two standard deviations, we see that, ceteris paribus, increasing wages by 0.372 will reduce the quit rate by 8.2%. Similarly, increasing the proportion of women aged 55 or more to 22.4% will produce a 3.3% fall in the quit rate. Moving two standard deviations above the mean for the employment growth variable also reduces the quit rate, this time by 5.7%. Contrast this with the effect increasing the proportion of

low service females in an industry has on the quit rate. An industry where the proportion of women with less than 13 months' service is increased to 0.71 will have a quit rate that is 28.0% higher than one with the manufacturing average of 0.46. A comparable increase in the proportion with 13-24 months' service (0.44 to 0.69) will increase quitting by 17.2%.

Thus we see here that the two variables influencing female quit rates most are the length of service ones: low lengths of service produce high rates of turnover, with those women with less than one year's service having greater propensity to quit than those recruited 13-24 months ago. Wages and employment growth also have important roles to play in determining female quitting, both these being negatively related to turnover. It is also interesting to note that there is little difference between the three female occupational quit rates. This is a significant finding because it is generally supposed that important variations do occur between these rates.

In both the male and female analyses therefore, the single most important variable influencing quit rates is length of service. Wage rates and employment growth also seem to be important. Contrary to expectations however, we note that the predicted negative relationship between quit rates and skill levels failed to materialise. Instead, both sets of results seem to indicate that variations in quits between the differential skill levels are much smaller than anticipated.

7.4 Footnotes

(1) Data availability meant that the average wage had to be defined as the annual wage bill divided by total (male and female) employment. That is to say, the same value for the MLH average wage is used for both the male and female quitting equations. There is a potential problem, common to all cross-section studies in this area, in that the MLH average wage will be partly determined by the occupational structure and some of the other variables included in the explanation of quitting. However, it is believed that the wage variable, as defined, is indicative of whether an MLH is a high of low paying sector. The highest average wage was £1396 in Printing and Publishing (486), closely followed by £1390 in Mineral Oil Refining (262). Such earnings must make workers reluctant to leave their employment and be an important factor in contributing to the low annual quit rates observed in these MLHs (15.9% for males and 35.8% for females in Printing and Publishing, and 8.4% for men and 12.4% for women in Mineral Oil Refining).

(2) Time Series Processor Package developed by B.H.Hall and R.E.Hall (1980).

(3) A one-tailed test is performed on the overtime coefficient - i.e. the alternative hypothesis is that this coefficient is positive.

7.5 Appendix: Variables Used and their Data Sources

The following lists the variables used in our regression analysis and their sources.

Q Male/female quit rates in the manufacturing industry as estimated by the Department of Employment in 1968 for the four periods February, May, August and November. The four quit rates were averaged and multiplied by 13 to get an annual quit rate. Source: Department of Employment Gazettes, April, July, October 1968 and January 1969.

ADM Male/female administrative, technical and clerical workers as a proportion of total male/female employees in May 1968. Source: Department of Employment Gazette, January 1969.

SK Male/female skilled workers as a proportion of total male/female employees in May 1968. Source: Department of Employment Gazette, January 1969.

SSK Male/female semi-skilled workers as a proportion of total male/female employees in May 1968. Source: Department of Employment Gazette, January 1969.

USK Other male/female workers as a proportion of total male/female employees in May 1968. Source: Department of Employment Gazette, January 1969.

W Average wage in 1968 calculated by dividing total wages and salaries by total employment. Source: Census of Production, Summary Tables, 1968.

A Proportion of full-time male/female workers aged 55 and over. Source: Sample Census, 1966 (G.B.) Economic Activity Tables, Part 1.

EG Male and female employment growth in each industry. Estimated as the difference in the number of male and female employees in employment in December 1968 as compared with December 1967 as a proportion of the total number in employment in December 1967. Source: Department of Employment Gazette, January 1969.

AR_1 Male/female accession rate as measured by the Department of Employment in the four periods August and November 1967 and February and May 1968. The four accession rates were averaged and multiplied by 13 to get an annual figure. Source: Department of Employment Gazettes, October 1967, and February, April and July 1968.

AR_2 Male/female accession rate as measured by the Department of Employment in the four periods August and November 1966 and February and May 1967. The four accession rates were averaged and multiplied by 13 to get an annual figure. Source: Department of Employment Gazettes, October 1966, and February,

April and July 1967.

OV Overtime expressed as the number of hours worked over and above 40 hours per week - i.e. (H-40) where H = average hours worked by male manual workers in April 1968 and October 1968. Source: Statistics on Income, Prices, Employment and Production, June 1969.

PS Deviation from average plant size. Plant size estimated as the total number of workers employed in establishments with more than than 25 employees divided by the total number of establishments with more than 25 employees in 1968. Source: Census of Production, 1968.

SW Shift work where workers on shift work are expressed as a proportion of all manual workers in October 1964. Source: Ministry of Labour Gazette, April 1965.

MRPT Female workers in 1968 who were both married and worked part-time expressed as a proportion of total female employment. Source: Census of Population, 1968.

SEAM Proportion of male/female employees in 1969 in the following four regions: the South East, East Anglia, the West Midlands, and the East Midlands. Source: British Labour Statistics, 1969.

CON Proportion of male/female workers in 1966 in the following seven conurbations: Greater London, the West Midlands, Merseyside, Tyneside, South East Lancashire, West Yorkshire and Central Clydeside. Source: Sample Census 1966, Economic Activity Tables, 1968, Part 1.

Chapter 8 Company E

8.1 Introduction

Although located in the chemical industry, Company E is not a particularly capital intensive firm. Employing an extremely high proportion of unskilled (mainly female) labour, there were 1,244 workers with the firm when the study commenced in mid-February 1980. However, this number excluded some 400 employees who were not working at the main location, this being the focus of our research. The excluded employees were almost exclusively involved in marketing and some 350 were sales staff scattered throughout the country while the remaining 50 were all based in London. At the main factory and office location some 70% of the employees were female, and an almost similar percentage were classified as manual. The unskilled workers engaged in production were not well paid, but the remuneration of all other employees was thought to be comparable with average earnings in the local labour market.

An important feature within this company was an evening shift employing about 130 workers (almost exclusively female) for four evenings a week. A fall in demand in the early summer of 1980 saw the introduction of a four day week and the laying-off of all workers on this evening shift at the end of June - early July. Later in the year Company E took over a rival company, closed down its production facilities and transferred all production to their own factory. This ensured a return to full capacity working and enabled both full-time working and the evening shift to be restored. This latter event took place in early January 1981. The figures for

starters (584) and leavers (541) are thus inflated because they include these evening shift employees. However, even with this group excluded, it is clear that turnover within Company E is considerably greater than in the other two companies, this no doubt reflecting the repetitive nature of much of the assembly work carried out in the firm. The situation regarding the total number employed is complicated by the takeover. Total employment in mid-February 1981 had increased by 43 (3.5%) when compared with the position twelve months earlier. However, the company considered that 100 of the starters were only taken on because of the extra work which followed as a direct result of the takeover.

8.2 Sex and Occupational Status

The company contained, as of February 1980, 1244 employees, of whom 877 (70.5%) were female, and 367 (29.5%) were male. Table 8.1 shows the (broad) occupational distribution of all employees broken down by sex. We can see that manual workers dominate, accounting for 874 workers (70.3%) of the total workforce, with just over half of these (454) falling into the non-craft production category. The twilight group make up a sizeable proportion of the total workforce (10.7%) and have been separately identified for two reasons: first, they are almost exclusively female - 131 out of 133 are women; and secondly, their patterns of labour mobility are almost bound to differ from the rest of the working population because the nature of their work (essentially part-time shift work operating from 18.00 to 22.00 hours four days a week, Monday to Thursday) is so different. There are 370 (29.7%) workers in the non-manual category, including

Table 8.1 Occupational Distribution of Manpower Stock. Males (M) and Females (F)

Occupation	M	F	All	% of 1244
(1) Managers	36	4	40	3.2
(2) Prof & related, Engineers & scientists	43	10	53	4.3
(3) Technicians	9	11	20	1.6
(4) Office supervisors	16	18	34	2.7
(5) Office workers	17	206	223	17.9
(6) Foremen	21	24	45	3.6
(7) Craftsmen	50	2	52	4.2
(8) Semi-skilled machinists, Other non-craft production	74	380	454	36.5
(9) Other manual	99	91	190	15.3
(10) Twilight	2	131	133	10.7
Total employment all occupations	367	877	1244	100.0

223 office workers. Managers, professional categories and office supervisors account for 10.2% of all employees.

It is clear from the table that women are primarily concentrated in two categories, office workers (206) and non-craft production (380). Between them, these two categories account for two-thirds (66.8%) of the total female workforce. Just over half the supervisors are female. However, there are relatively few women in this supervisory position given that office workers are almost exclusively female. There are 16 male office supervisors and only 17 male office workers. Of the remaining female workers, 131 (or 14.9%) can be found in the twilight group, while a further 91 (10.4%) come under the heading 'other manual' workers.

In contrast to the female situation, the male workforce is much more evenly distributed among occupations. Moreover, within both the manual and non-manual categories, male workers tend to dominate

the more skilled occupations. For example, 19.3% of males can be found working either as foremen or craftsmen, while a further 9.8% are managers and another 11.7% employed as either engineers, scientists or professional workers.

It is clear then that despite making up over 70% of the workforce, few females aspire or have been recruited to senior positions within the company. Moreover, while male workers tend to be recruited for a wide range of occupations, female workers are concentrated in a relatively small number.

8.3 Functional Area

Table 8.2 shows the distribution of employees between seven functional areas. Nearly half (49.5%) the company's workforce are involved in 'production operations' while the other areas linked with production ('installation, maintenance and repair' and 'organisation and support') account for another 8.9%. 'Materials control and

Table 8.2 Distribution of Employment by Functional Area

Function	Number	% of Total
(A) Production: Operations	616	49.5
(B) Production: Installation, maintenance & repair	69	5.5
(C) Production: Organisation & support	42	3.4
(D) Research & Development	0	-
(E) Materials control & movement	180	14.5
(F) Commercial, management & administrative services	251	20.2
(G) Other (common & miscellaneous services)	86	6.9
Total	1244	100.0

movement' account for 14.5% of employment and slightly more than one fifth (20.2%) can be found in areas relating to 'commercial, management and administrative services'. The company employs no workers for the purposes of Research and Development, which might explain the small number of non-manual technical staff such as engineers, scientists and technicians to be found working in the company. (Appendix 8.9 gives further details on the definition of the functional areas).

Table 8.3 breaks down the workforce in the form of an occupation by function matrix. The majority of workers in 'production operations' for example are either semi- or unskilled. Almost the total non-craft production workforce can be found here (442 out of 454), with three-quarters of the number employed on the twilight shift (99 workers) also working here. Non-manual workers account for less than 10% of the total workforce in this area. By

Table 8.3 Occupation by Function Matrix

	Function					
Occn	A	B	C	E	F	G
1.	11	5	1	3	20	0
2.	4	1	9	0	35	4
3.	3	1	15	0	1	0
4.	8	0	0	0	25	1
5.	26	1	6	21	162	7
All N-M	52	8	31	24	243	12
6.	20	8	3	10	0	4
7.	1	51	0	0	0	0
8.	442	0	0	1	0	11
9.	2	2	8	130	0	48
10.	99	0	0	15	8	11
All Occs	616	69	42	180	251	86

contrast, 'production, maintenance and repair' is almost entirely skill intensive, with 85.5% of the workforce falling into the two categories foremen and craftsmen. Non-manual workers also dominate in 'production, organisation and support' where technicians (35.7%) and professional workers, engineers and related workers (21.4%) make up the two largest groups. Other manual workers account for another 19.0% of the number employed here. Similarly, 'materials control and movement' is almost entirely made up of manual workers with 72.2% of the number here falling in to the other manual category (warehousemen/storemen). As expected, there is a high clerical component working in 'commercial, management and administrative services'; 64.5% are office workers and another 10.0% office supervisors. A large number of professional workers, engineers and related workers (35 out of 53) can also be found in this function. Finally, 'other common and miscellaneous services' (including catering, security, cleaning, etc.) consist mainly of other manual workers (55.8%) and non-craft production and twilight workers (12.8%) each.

8.4 Age Structure

Table 8.4 shows the age distribution in 5 yearly intervals. It is obvious from the table that there are a large number of workers in the younger age categories. While 17.0% of workers are aged between 15 and 19, a further 14.5% can be found in the 20 to 24 age category. Almost one third of the workforce therefore are under 25 years of age. This peak in the under 25 age group quickly falls off in the late twenties, only to rise to a new but lower peak in the

Table 8.4 Age Distribution of Male and Female Employees

	Company E			Economically Active Population (*)	
Age Group	Males (%)	Females (%)	Total (%)	Males (%)	Females (%)
15-19	9.6	20.1	17.0	7.3	11.2
20-24	9.3	16.8	14.5	12.1	13.4
25-29	6.8	9.4	8.6	11.1	8.0
30-34	12.0	6.6	8.2	9.8	7.5
35-39	10.9	8.5	9.2	9.6	9.1
40-44	8.7	9.9	9.6	9.8	10.7
45-49	10.1	12.1	11.5	9.9	11.7
50-54	8.2	9.1	8.8	9.3	10.5
55-59	13.9	6.3	8.6	9.3	9.3
60-64	8.7	0.9	3.2	8.1	5.2
65+	1.9	0.2	0.7	3.6	3.3
All ages	100.0	100.0	100.0	100.0	100.0

(*) This column refers to the local labour market, namely the South-East, Outer: Sub-division Solent.

Source: Census 1971, England and Wales, Economic Activity, Sub-Regional Tables (10% sample), Table 5.

late forties where 11.5% of workers are aged 45 to 49. This secondary peak then tails off, at first more slowly than the fall from the first peak, but then much more rapidly in the over 60 age categories.

It is clear that the overall age distribution is very much dominated by the bimodal female distribution. This is widely expected because of the fall in female participation rates in the labour force as a whole in the 25 to 40 year age range due to marriage and family commitments. This feature of female employment was confirmed when we compared the age distribution for females in Company E with that for economically active female workers in the relevant local labour market. However, Company E clearly has a higher concentration of

young female workers; 36.9% are less than 25, while one quarter of the females in the local labour market are below this age. Older female workers tend to be under-represented in the company. There are almost no females aged over 60 (only 1.1%) compared with 8.5% in this age range in the whole region.

It is clear that the age distribution for males is more uniform. Comparing it with the age distribution of male workers in the local labour market however shows one or two small variations that could be of significance, most notably the "bulge" in the distribution of males in the 55-59 age group. For example, if this bulge was found to be located among certain key occupational groups, the company might be well-advised to draw up plans to train younger workers as their replacements so as to avoid the disruption caused by a high proportion of key workers retiring at the same time.

Table 8.5 shows the age distributions for different occupations and indicates the extent of the problem. Without doubt, much of the bulge can be accredited to the concentration of workers from a few key occupations, including managers, foremen and craftsmen in the 55-59 age range. What is more, in the case of managers and craftsmen, the bulge occurs in the upper reaches of this range (i.e. 57.5-59) with 12.5% of all managers and 11.5% of all craftsmen falling in this category (not shown here). It is clear however that the problem does not stop here, for a further 11.5% of craftsmen can be found in the 60-64 age group. Clearly then, the firm will face a number of potential problems if they fail to take appropriate measures to replace these workers before they retire.

Table 8.5 Age Distribution For Different Occupations

% of Total Number in each Occupation

Age (years)	Non-Manual 1	2	3	4	5	Manual 6	7	8	9	10
15-19	0.0	0.0	20.0	0.0	15.7	0.0	5.8	33.5	7.9	1.5
20-24	0.0	5.7	20.0	8.8	21.1	0.0	9.6	20.4	8.4	7.6
25-29	0.0	16.9	5.0	8.8	11.2	4.4	5.8	6.2	6.4	18.1
30-34	20.0	32.0	5.0	11.7	5.3	8.9	5.8	2.2	9.5	18.8
35-39	20.0	13.2	15.0	8.8	7.6	11.1	7.7	6.0	7.9	19.6
40-44	10.0	11.3	5.0	20.6	9.0	13.3	15.4	8.1	7.9	11.3
45-49	22.5	9.4	0.0	17.6	12.6	28.9	11.6	8.8	13.6	7.6
50-54	2.5	7.6	10.0	14.7	7.6	13.3	11.5	7.0	13.2	9.1
55-59	17.5	0.0	10.0	5.8	7.6	15.6	15.3	6.3	14.7	5.3
60-64	5.0	3.8	5.0	2.9	0.9	4.4	11.5	1.1	9.0	1.5
65 +	2.5	0.0	5.0	0.0	1.3	0.0	0.0	0.2	1.6	0.0
Total	100	100	100	100	100	100	100	100	100	100
Mean	45.1	36.7	36.7	41.8	34.7	46.6	43.6	30.9	43.0	37.5
Median	44.0	33.6	31.1	42.2	32.3	47.3	44.1	23.2	45.5	35.7

Means and medians given in years.

As might be expected from the preceding analysis, those occupations in which females predominate (non-craft production and office workers) are bimodally distributed with respect to age. In the first category 55.8% of females are under 25 years of age while in the second 37.9% can be found in this age range. The third group in which females predominate, the twilight occupation, does not show the same bimodal distribution. One possible reason for this is that the part-time nature of twilight work might afford women in the 25 to 44 age range time to go out and work while allowing them enough free time to bring up a family. This does seem to be the case with 67.8% of twilight workers falling into this category.

Table 8.5 also presents the mean and median ages of workers in the various occupational groups. The only occupation where the difference between the two is fairly sizeable is non-craft production. Here, the ratio of the mean age to the median age is 1.3 indicating that the age distribution is rather more heavily skewed towards the younger age categories than the mean suggests. It is also worth noting the considerable difference in the average age of male and female office supervisors. While the mean and median ages for female supervisors are 46.3 and 45.6 years respectively, the corresponding averages for males are much lower at 36.8 and 30.2 years (not shown here). On average then, males seem to aspire to the position of supervisor at an earlier age than females.

8.5 Labour Force Stability

All firms are interested in keeping labour turnover rates down to an acceptable minimum as this helps ensure labour stability. Before analysing the turnover situation in Company E after February 1980 it is worth looking at just how stable the company's workforce was before our period of study. We can derive some sort of impression of this by looking at length of service data on the workforce. But first a word of warning. Care must be taken to distinguish between occupations/areas where the average length of service is low due to high rates of turnover and those where the average length of service is low because of a recent expansion in numbers. While the latter does not necessarily imply instability, the former does. This said however, in the absence of labour turnover statistics, it is still useful to look at length of service distributions in order to get

some general picture regarding labour stability.

Table 8.6 presents such a distribution broken down by sex, and it becomes clear that an important feature of Company E's manpower structure is the high proportion of low service employees, particularly female. Taking the labour force as a whole, nearly a third of all employees (30.2%) have less than one year's service while over a half (52.3%) have no more than 4 years' service. Important differences however exist between the two sexes. While the proportion of males with less than one year's service stands at 23.9%, the female percentage is 32.8%. But perhaps more significantly, while just over half the female population (50.9%) have less than 3 years' service, the same figure for males is just over 6 years'. Furthermore, while 35.6% of males enjoy service of 10 years or more, the figure for females is only 18.2%.

It should be clear from the table then that the male workforce has a greater tendency towards stability than the female one. The fact that the ratio of the mean to median length of service for males is less than it is for females (1.4 compared to 1.9 in the female case) only confirms this for it indicates that the female distribution is more heavily concentrated in the shorter length of service groups than is the male.

If we now turn our attention to the 5 year groupings shown in Table 8.6 we see that the proportion of employees in each group decreases with increasing length of service. This is what we expect. However, if we now consider some of the more detailed groupings, this is no longer the case. Taking 1 year groupings, we see that the

Table 8.6 Length of Service Distributions

Service group (years)	Males (%)	Females (%)	Total (%)
0 -0.5	13.9	16.2	15.5
0.5-1.0	10.0	16.6	14.7
1.0-1.5	2.2	3.9	3.4
1.5-2.0	5.2	6.6	6.2
2.0-2.5	1.4	1.7	1.6
2.5-3.0	4.6	5.9	5.6
3.0-3.5	2.7	2.1	2.3
3.5-4.0	1.4	3.7	3.0
4.0-4.5	0.5	1.9	1.5
4.5-5.0	0.9	1.7	1.5
0 - 5.0	42.8	60.3	55.3
5 - 6	7.1	5.1	5.7
6 - 7	5.7	4.9	5.1
7 - 8	3.5	4.8	4.4
8 - 9	2.5	3.1	2.9
9 -10	2.7	3.5	3.3
5 -10	21.5	21.4	21.4
10 -15	18.5	12.0	13.9
15 -20	5.4	3.3	3.9
20 -25	4.6	1.5	2.4
25 -30	1.9	0.8	1.1
30 +	5.2	0.6	1.9
All lengths	100.0	100.0	100.0
Mean (years)	8.5	5.2	6.2
Median (years)	6.1	2.8	3.6

proportion in each group falls steadily up to the 4-5 year group, rises in the 5-6 year group, and then falls again. Similar features are noted when we take the shortest length of service grouping, a six monthly one. Such a distribution is <u>not</u> one that could arise in a firm with a constant workforce over time which draws replacements for its leavers from a single population with given characteristics. There are two major possible causes for the emergence of such a distribution, both of which suggest some caution when it comes to

interpreting length of service statistics as indicators of stability:

(a) The size of workforce may not have remained constant over time. We do not have sufficient historical data on the company's employment in the past to check this possibility, but it seems likely given the nature of the industry it is in. It is a 'fast-moving' consumer industry whose demand is likely to be highly sensitive to economic fluctuations and, moreover, as the company has a high proportion of low skilled female workers, it is likely to have little incentive to 'hoard' its workforce through periods of recession. So, for example, the fact that only 3.0% of the total workforce (1.4% of males and 3.6% of females) have 4-5 years' service may reflect the fact that the national economy was in recession during 1975, and Company E's workforce suffered a corresponding contraction.

(b) The company may not have been drawing its workers from the same 'population' over time. That is, the proportions of different types of recruits may vary and it will be possible to reduce this source of bias by considering these distributions for different occupations (Table 8.8) and age groups (Table 8.9). Under this possibility, the 'large' proportion of employees in the 5-6 years service group may be partly due to the company, for some reason or other, having recruited a particularly 'stable' batch of employees

during the 1974-75 period. It should be noted that the types of applicant presenting themselves for employment in the company are likely to change over time with economic conditions and the tightness of the local labour market.

A final possible source of bias in the length of service data is that although they accurately reflect the length of individual periods of employment with the firm, they may understate workforce stability in the sense of 'attachment' to the company. This is because a significant minority of employees (mainly women) have been employed with the company on one or more previous occasions. This is particularly true of those on the 'twilight' shift. Such women have considerably lower lengths of service than other employees, 66.2% having been with the company for less than one year (see Table 8.8). However, this conceals the fact that many of these women have been on the company's books for several years, coming on and off the payroll at either her own, or the company's, behest.

Our preliminary analysis of the manpower situation in Company E would seem to confirm the general expectation (see Chapter 6.2) that females exhibit greater instability than males. A number of labour market economists have investigated the relationship between sex and length of service, and while some conclude that males tend to have longer lengths of service than females, others argue that such a conclusion tends to be based on 'unfair comparisons'. It is the belief of this second group that many studies in the past have failed to compare 'like with like'. In particular, they claim that if

certain personal characteristics (age for example) and job characteristics (including occupation, pay, etc.) are controlled for, then the much publicised differences in labour stability rates between men and women often fail to appear, and where they do they are much smaller than is commonly presumed.

We can judge the validity of their claims by refering to Table 8.7 which gives the mean length of service for our ten occupational categories broken down by sex. Taking the non-manual categories first, we see that the mean length of service for female managers (admittedly only a small group totalling four) is almost twice that for male managers, while the mean length of service for female office supervisors also appears to be greater than for males. It would appear that female clerical workers need considerably longer lengths of service than males before they can obtain promotion to the supervisory level (1). Sex differences in the mean lengths of service in the office worker category on the other hand are negligible. The tendency here is for both male and female office

Table 8.7 Mean Length of Service Distributions for Individual Occupations Broken Down by Sex

	Non-manual					Manual					All
	1	2	3	4	5	6	7	8	9	10	
M	10.9	7.3	18.0	9.9	5.9	20.0	8.6	5.7	7.4	2.9	8.5
F	20.9	6.9	5.4	13.9	5.7	14.3	9.0	4.3	7.0	2.2	5.2
R	0.52	1.06	3.33	0.71	1.04	1.40	0.96	1.33	1.06	1.32	1.63

M = males, F = females, R = ratio of males to females.

workers to have relatively low mean lengths of service of just less than six years. This pattern is repeated in the two other predominantly female occupations, non-craft production and the twilight shift (although it should be said that there are only two men employed on the twilight). So, it would appear that in these three occupations at least, the relatively low mean lengths of service cannot be entirely attributed to the high proportion of female workers in them. Instead, these occupations have low average lengths of service because they contain workers (both male and female) who are more unstable than average. In other words, the low length of service of women in these occupations cannot be attributed to their being women but to the fact that they are employed in unstable occupations. In contrast to these low mean lengths of service we have the foremen category where both the male and female means are very high (20.0 years and 14.3 years respectively).

Looking at the ratio of male to female mean lengths of service, it is significant to note that in all occupational groups except for technicians, this ratio was less than the ratio for the company as a whole (1.63). In other words, differences in labour stability between the sexes are reduced when workers from the same occupation are compared.

The median lengths of service for each occupation (broken down by sex) were also computed but are not reported here. The most interesting result in the context of male/female stability rates relates to non-craft production workers. The median length of service for males was only 1.1 years (2.5 years for females) compared

with a mean of 5.7 years (4.3 years for females). In other words, the presence of a comparatively small number of male non-craft workers with relatively long lengths of service produces an upward bias in the mean statistic. The median however remains unaffected by such a distortion. Hence, with a median length of service of 1.1 year we know that male workers in non-craft production are made up of a mixture of new recruits and workers who have longer lengths of service. It is also worth mentioning that we found the median for twilight workers, less than one year, to be much lower than the mean of 2.2 years.

Table 8.8 gives the length of service distributions broken down by occupation. The two groups to exhibit the greatest stability in the non-manual category are managers and office supervisors. It is interesting to note that no office supervisor has less than two years' service, thus providing confirmation that such a position is gained by internal promotion. In contrast, it looks as if some managers are recruited from the external labour market while others are recruited internally. Office workers on the other hand display great instability among non-manual workers. It is something of a surprise to see workers from the professional, engineering and related category displaying relative low labour stability. One possible explanation for this could be that this group may include some highly mobile workers such as computer operators and programmers. Also unanticipated was the relatively high stability of technical workers - viz. the proportion located in the upper reaches of the service distribution (20% had in excess of 30 years' service). It should be pointed out however that this group is a

Table 8.8 Length of Service Distributions for each Occupation

% of Total Number in each Occupation

Length of Service (years)	Non-manual					Manual				
	1	2	3	4	5	6	7	8	9	10
0–0.5	0.0	3.8	20.0	0.0	7.6	0.0	9.6	25.2	10.5	23.3
0.5–1	7.5	20.7	0.0	0.0	12.6	2.2	7.6	12.8	11.0	42.9
1–2	5.0	5.7	0.0	0.0	14.8	0.0	13.5	10.6	10.5	4.5
2–3	10.0	3.8	15.0	2.9	6.3	2.2	7.7	10.1	3.7	5.3
3–4	0.0	5.7	5.0	11.8	8.1	2.2	1.9	5.3	3.2	6.0
4–5	2.5	1.9	5.0	5.9	3.1	0.0	1.9	3.5	2.1	3.0
0–5	25.0	41.6	45.0	20.6	52.2	6.6	42.2	67.5	41.0	85.0
5–10	22.5	34.0	20.0	20.6	29.1	8.9	15.4	16.7	32.6	10.5
10–15	27.5	11.3	10.0	26.5	13.0	35.6	30.8	9.9	17.4	4.5
15–20	2.5	9.4	5.0	17.6	2.2	20.0	1.9	4.0	1.6	0.0
20–25	10.0	0.0	0.0	8.8	2.7	11.1	1.9	1.1	3.2	0.0
25–30	7.5	0.0	0.0	2.9	0.0	6.7	1.9	0.4	2.1	0.0
30 +	5.0	3.8	20.0	2.9	0.4	11.1	5.8	0.4	2.1	0.0
Total	100	100	100	100	100	100	100	100	100	100
Mean	11.9	7.2	11.1	12.0	5.7	16.8	8.6	4.5	7.2	2.2
Median	10.1	5.8	5.6	11.3	4.4	14.9	5.6	2.3	6.3	0.8

Means and medians given in years.

relatively small one, made up of 20 workers, which means that only 4 technicians had 30 years' service or more.

Turning to the manual group, there is a much more well-defined hierarchy of labour stability than for non-manual occupations. As expected, foremen exhibit the greatest degree of stability with a mean length of service of 16.8 years. Only 6.6% have less than 5 years' service and it is clear that becoming a foreman is achieved by internal promotion. The second most stable group of manual workers are craftsmen, and then (in descending order of stability) come other manual workers, non-craft production workers,

and employees working in the twilight shift.

There is another possible way of using the information at hand to examine the relationship between sex and length of service. We have already seen that the two occupational groups with the highest proportion of women (twilight and non-craft production workers) have the lowest mean lengths of service of the ten occupational groups (2.2 and 4.5 years respectively). But we have also argued that short lengths of service in occupations where there is a high proportion of women is at least partly a characteristic of the type of labour employed in that occupation irrespective of sex. If, however, we were to assume that the sex composition of an occupation was an important determinant of labour stability in that occupation, then we would expect this relationship to hold across all occupations. If we were then to hypothesise that there was an inverse relationship between the proportion of females employed in an occupation and the mean length of service in that occupation (as hypothesised in many conventional labour market economic texts), we can test for this by using a statistical technique known as Spearman's Rank Correlation. Across the ten occupations this rank correlation is -0.506. The critical value for rejecting the null hypothesis at the 5% significance level is -0.564, so we must accept that there is no significant correlation between the mean length of service observed in any occupational group and the proportion of that group's workers who are women. One word of caution however; it is possible that our findings (and thus conclusions) have been influenced by the occupational categories chosen. Because these categories are 'broad' in that they each might contain a number of

jobs which might be quite different from one another, we cannot say with certainty that our findings/conclusions are totally accurate.

Finally, before turning to look at turnover rates and internal movements within the firm, it might prove interesting to consider the relationship between the various occupational mean and median lengths of service and other influential variables such as age and age-at-joining the company.

Taking age first, we expect from our work on manufacturing quit rates that age and labour stability are positively correlated. Put simply, because labour turnover tends to decrease with age it is likely that a firm with a young workforce will suffer greater instability (and thus lower mean and median lengths of service) than one with an older labour force. Care however must be taken when interpreting statistics of this nature because young workers clearly cannot have long lengths of service. Table 8.9 shows just how closely age and mean length of service are related and, as expected, older employees tend to have longer lengths of service than younger ones. There does appear to be an interesting division in the labour force. Almost one-third of the labour force are over 45 years of age and these age bands have an average length of service which is close to, or greater than, 10 years. This is a respectable average length of service and shows that the part of the labour force recruited at an age of 35 and above is relatively stable and not as prone to turnover as younger recruits. Moreover, considering males and females separately we see that male workers exhibit greater stability in every age category over the age of 35. There is very little to choose

Table 8.9 Mean and Median Lengths of Service by Age Group, Males and Females

Age (years)	Males Mean	Males Median	Males Number	Females Mean	Females Median	Females Number
15–19	0.9	0.4	35	1.1	0.7	176
20–24	1.8	0.6	34	2.3	1.8	147
25–29	4.4	4.2	25	4.2	2.1	82
30–34	4.1	2.7	44	5.2	2.9	58
35–39	7.1	6.3	40	5.2	4.0	75
40–44	9.7	10.7	32	6.2	5.8	87
45–49	11.8	12.1	37	8.8	7.9	106
50–54	14.0	11.9	30	9.3	9.0	80
55–59	14.6	12.3	51	11.5	10.0	56
60–64	15.6	12.8	32	9.6	4.6	8
65 +	8.2	6.1	7	–	–	2
All	8.5	6.1	367	5.2	2.8	877

between the mean and median length of service of male and female workers in the 15–34 age bracket where 52.8% of females can be found compared to 37.6% of males. Such young workers have very low lengths of service and it is this which contributes to the overall picture of high turnover and instability which the company exhibits.

However, it might be argued that a more fundamental relationship is that between age-at-joining and length of service. From the firm's point of view this second relationship could prove extremely useful, particularly if it could be used to indicate which age groups the company might concentrate on when recruiting in an effort to reduce labour turnover (2). One difficulty involved in studying the relationship between age-at-joining and labour stability is that, while an employee recruited at an older age will tend to have higher stability and lower turnover rates than one recruited at a younger age, older recruits cannot be expected to have the same

potential length of service as younger recruits. Thus, there are two forces pulling in opposite directions with regards to older employees: one, the relationship between age and length of service, tends to increase labour stability, the other, the relationship between age-at-joining and length of service, tends to reduce it. This makes it extremely difficult to predict the overall effect of these two influences on labour stability when the firm is recruiting older workers.

Table 8.10 shows the relationship between various age-at-joining groups and the mean and median lengths of service for the company as a whole. The mean and median length of service is low for those employees joining the company in the age range 15-19. The mean for all workers who joined in the 20-24 age band rises to 6.3 years (not shown in the table). However, the median length of service for this group remains low at only 1.8 years, indicating that the mean

Table 8.10 Mean and Median Lengths of Service by Age-At-Joining Group, Males and Females

	Males			Females		
AAJ (years)	Mean	Median	Number	Mean	Median	Number
15-19	4.6	1.6	61	3.4	1.7	287
20-24	10.8	6.0	52	4.4	1.2	119
25-29	11.4	7.6	66	6.4	2.1	76
30-34	8.9	5.9	51	7.1	6.3	101
35-39	9.0	10.1	37	7.7	7.4	107
40-44	9.3	8.2	37	6.2	6.0	95
45-49	8.6	9.2	29	5.6	5.5	54
50-54	5.8	6.2	17	4.0	2.8	25
55-59	4.6	3.7	11	2.0	0.8	10
60-64	2.5	1.4	3	3.9	2.3	3
65+	2.2	1.1	3	-	-	-
All	8.5	6.1	367	5.2	2.8	877

is inflated by a small number of workers who joined the company at this age and have stayed a long time. The mean length of service rises in the middle age ranges (25-49) to 8 or 9 years, only to decline again in the older groups. This is to be expected for, ceteris paribus, workers recruited in the middle age ranges tend to have lower rates of voluntary turnover than those recruited in either the lower or higher age ranges (3). It is surprising to see that Company E tends to recruit a high proportion of its workforce from the younger age ranges which have relatively low mean (and more especially median) lengths of service. It might be possible for the company to increase its labour stability by concentrating its recruitment on those age ranges with the highest average length of service. However, it might be that relatively few workers in the 25-49 age group present themselves to the company for employment, and such a change in recruiting policy may not be feasible.

The relationship between age-at-joining and length of service is almost certainly going to vary according to occupation and sex, and in Table 8.11 we present this information for five occupational groups, each of which had more than 90 employees.

It is evident from this table that the mean and median lengths of service are generally low for workers joining the company in the lower age ranges. With the exception of female other manual workers, the results presented for the remaining groups show a definite bias towards a unimodal distribution. While the company tends to concentrate its recruitment on the younger age groups (certainly in the case of female non-craft production workers and

Figure 8.11 Age-At-Joining and Length of Service for Various Occupational Groups in Company E (*)

(1) Non-Craft Production, Female

AAJ (years)	Length of Service Mean	Median	No.	% of Total
15-19	2.5	1.3	185	48.7
20-24	2.3	0.5	51	13.4
25-29	6.3	1.1	16	4.2
30-34	9.6	7.4	25	6.6
35-39	8.8	9.1	35	9.2
40-44	6.4	5.3	41	10.8
45-49	5.8	6.1	19	5.0
50-54	3.6	3.8	7	1.8
55-59	-	-	1	0.3
60-64	-	-	-	-
65+	-	-	-	-
Total	4.3	2.5	380	100.0

(2) Office Workers, Female

AAJ (years)	Length of Service Mean	Median	No.	% of Total
15-19	4.2	1.8	71	34.5
20-24	3.7	1.3	34	16.5
25-29	5.9	6.3	13	6.3
30-34	7.5	5.4	17	8.3
35-39	8.9	8.6	32	15.5
40-44	7.0	6.5	18	8.7
45-49	7.7	6.5	14	6.8
50-54	3.5	3.1	5	2.4
55-59	-	-	1	0.5
60-64	-	-	1	0.5
65+	-	-	-	-
Total	5.7	4.3	206	100.0

(3) Other Manual, Female

AAJ (years)	Length of Service Mean	Median	No.	% of Total
15-19	5.8	1.9	20	22.0
20-24	11.7	9.3	9	9.9
25-29	9.7	5.5	7	7.7
30-34	6.4	7.0	9	9.9
35-39	6.4	5.2	15	16.5
40-44	7.9	8.4	15	16.5
45-49	4.5	1.8	9	9.9
50-54	6.0	7.1	5	5.5
55-59	-	-	1	1.1
60-64	-	-	1	1.1
65+	-	-	-	-
Total	7.0	6.4	91	100.0

(4) Twilight, Female

AAJ (years)	Length of Service Mean	Median	No.	% of Total
15-19	0.3	0.04	2	1.5
20-24	1.1	0.5	14	10.7
25-29	2.2	0.7	30	22.9
30-34	2.5	0.8	32	24.4
35-39	2.8	0.8	16	12.2
40-44	2.7	0.8	16	12.2
45-49	2.9	0.8	8	6.1
50-54	1.2	0.8	7	5.3
55-59	1.2	0.7	5	3.8
60-64	-	-	1	0.8
65+	-	-	-	-
Total	2.2	0.7	131	100.0

(5) Other Manual, Male

AAJ (years)	Length of Service Mean	Median	No.	% of Total
15-19	2.8	1.6	13	13.1
20-24	4.6	0.4	6	6.1
25-29	10.5	6.3	14	14.1
30-34	9.1	3.4	11	11.1
35-39	9.9	11.9	12	12.1
40-44	11.4	11.0	10	10.1
45-49	8.2	7.8	11	11.1
50-54	5.9	6.3	11	11.7
55-59	4.2	3.7	7	7.1
60-64	-	-	2	2.0
65+	-	-	2	2.0
Total	7.4	6.3	99	100.0

(*) Age-At-Joining and Length of Service in Years.

female office workers) where the mean and median lengths of service are often short, those workers giving the longest lengths of service tend to be found in the middle age groups.

It is also interesting to note that the inclusion of the median statistic helps us to further isolate those age-at-joining categories that tend to promote the longest lengths of service. While the mean gives us some indication of these, the median narrows it down further. For example, in the case of female non-craft production workers, the median statistic suggests that half of those joining aged 30-34 enjoy a length of service in excess of 7.4 years, while half of those joining in the 35 to 39 age category achieve more than 9.1 years' service. Contrast this with those who joined the group in the 15-19 age range. Such workers form almost half of this category of manpower and have a median of only 1.3 years. Clearly then, the use of the mean and median together suggest that, for female non-craft production workers at least, the optimal age range to recruit workers from is 30 to 39. Yet, of the 380 females falling into this occupational category, only 60 (or 15.8%) were recruited in this age range. But, as we have already mentioned, this apparent peculiarity in the company's recruitment practices might be one forced upon it by the lack of suitably qualified middle-aged females in the local market offering themselves for work in the firm's non-craft production occupations.

A similar (unimodal) pattern regarding the relationship between the various age-at-joining categories and the mean and median service distributions presents itself for female office workers and

male other manual workers where the optimum age of recruitment appears to lie in a broad age between 30 and 49. This pattern however is not repeated in the case of female other manual workers where the maximum length of service appears to be for workers joining in the 20-24 age range.

The situation regarding female twilight workers is a different one however. The mean length of service distribution differs markedly from that of the median which is never greater than one year. The presence of a few longer serving employees in each age-at-joining category is clearly sufficient to produce a bias in the mean length of service.

8.6 Labour Turnover

The 12 months March 1980 - February 1981 were ones of mixed fortune for the company, as it was for many other firms in the midst of recession. For Company E, one consequence of this downturn in business was that it was forced to lay-off its entire twilight shift, some 10% of the labour force, in July 1980. It was for this reason that it was decided to divide much of our analysis for the year into two periods: March 1980 - June 1980 and July 1980 - February 1981. It was hoped that this would help us isolate the effect the lay-off had on turnover, thereby providing us with a useful (and perhaps contrasting) comparison with the motives for leaving in the earlier period.

It is clear from Table 8.12 that Company E suffered from an exceptionally high level of labour turnover; 541 workers left in

Table 8.12 Monthly Turnover in the Company

Month		No. at start of period	St.	Lv.	Annual TO	Invol TO		Voln TO	
						No.	% p.a.	No.	% p.a.
March	3	1244	51	74	72.0	14	13.6	60	58.4
1980	4	1221	70	66	64.8	9	8.8	57	55.9
	5	1225	80	79	77.4	11	10.8	68	66.6
	6	1226	73	48	46.5	8	7.8	40	38.8
	7	1251	12	139	140.5	109	110.1	30	30.3
	8	1124	3	37	40.1	16	17.3	21	22.8
	9	1090	38	31	34.0	15	16.5	16	17.6
	10	1097	15	21	23.0	10	11.0	11	12.1
	11	1091	38	10	10.9	3	3.3	7	7.6
	12	1119	39	6	6.3	4	4.2	2	2.1
	13	1152	133	22	21.9	8	8.0	14	13.9
Feb 1981	14	1263	32	8	7.5	2	1.9	6	5.6
Year End		1287	584	541	42.7	209	16.5	332	26.2

Key: St. = Starters ; Lv. = Leavers ; TO = Turnover

twelve months, representing 42.7% of the average number employed throughout the year. During this period there were also 584 starters, giving a net expansion of 43. It must be said however that the figures relating to the number of starters and leavers have been 'inflated' by the twilight lay-off. This lay-off represented some 23% of total labour turnover in the company during the period. However, the evening shift was restored in January 1981 after the company acquired a rival company and transfered all their production to its own factory.

Voluntary turnover in the first four months was five times larger than involuntary turnover and represents an annualised rate of 54.1%. Voluntary turnover started to decline when the lay-off was known and reached a low point in December 1980. In the July - February period voluntary turnover was running at 12.6% p.a.

In Table 8.13 we breakdown leavers by sex and reason for leaving in order to derive the two categories voluntary and involuntary leavers. The classification is derived from records in the personnel department and in many cases the reason for leaving was unspecified. However, there is no reason to believe that the involuntary reasons for leaving are inaccurate. In the twelve months the company lost 28 workers through retirement, 4 because of death, and a further 23 for health reasons. These represented 2.2%, 0.3% and 1.8% respectively of the average number employed during the year.

Annualising the rates for voluntary and involuntary turnover in Table 8.14 for the two periods highlights the differences in behaviour over the year. While the annualised voluntary and involuntary rates for the first period were the equivalent of 54.1% and 10.1% respectively, by the second period the voluntary rate had fallen to the equivalent of 12.6% p.a., with the involuntary rate standing at 19.7% p.a. In the first period, the male and female involuntary leaving rates were almost identical, while the female voluntary leaving rate at 61.9% p.a. was almost double the male rate. The involuntary leaving rate for females in the second period is boosted to 25.8% p.a. because of the lay-offs. If these are excluded (4 males and 122 females) then the annualised involuntary rates are 4.3% for males and 5.1% for females. The slump in the rate of voluntary leaving is greatest for females and, at 14.1% p.a., it was some fifty per cent greater than the male rate.

It should be stressed that voluntary quitting is likely to vary between occupations. The high turnover rates for females will be

Table 8.13 Reasons for Leaving, by Sex

Reason	LMON 3-6						LMON 7-14					
	Males		Females		Total		Males		Females		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Leaving District	6	10.7	19	9.0	25	9.4	2	5.1	8	3.4	10	3.6
Domestic/Personal	6	10.7	34	16.1	40	15.0	-	-	11	4.7	11	4.0
Pregnancy	-	-	13	6.2	13	4.9	-	-	16	6.8	16	5.8
Emigration	1	1.8	13	6.2	14	5.2	-	-	4	1.7	4	1.5
Personal Non-Job Related	13	23.2	79	37.4	92	34.5	2	5.1	83	35.6	107	15.0
Own Accord/Unspecified	24	42.9	69	32.7	93	34.8	8	20.5	22	9.4	30	10.9
To Increase Pay	5	8.9	9	4.3	14	5.2	2	5.1	2	0.9	4	1.5
Working Conditions	-	-	10	4.7	10	3.7	2	5.1	6	2.6	8	2.9
Lack of Job Satisfaction	1	1.8	8	3.8	9	3.4	1	2.6	2	0.9	3	1.1
Travel Difficulties	-	-	7	3.3	7	2.6	-	-	2	0.9	2	0.7
Temporary Employment (Student)	-	-	-	-	-	-	9	23.1	10	4.3	19	6.9
All Voluntary	43	76.8	182	86.2	225	84.2	24	61.5	83	35.6	107	38.9
Dismissal	4	7.1	7	3.3	11	4.1	-	-	8	3.4	8	2.9
End of Temporary Employment	-	-	3	1.4	3	1.1	4	10.3	2	0.9	6	2.2
Twilight Layoff	-	-	-	-	-	-	4	10.3	122	51.9	126	46.0
Health	2	3.6	14	6.6	16	6.0	-	-	7	3.0	7	2.6
Death	1	1.8	1	0.5	2	0.7	1	2.6	1	0.4	2	0.7
Retirement	6	10.7	4	1.9	10	3.7	6	15.4	12	5.1	18	6.6
All Involuntary	13	23.2	29	13.7	42	15.6	15	38.6	152	64.7	167	61.0
TOTAL	56	100.0	211	100.0	261	100.0	39	100.0	235	100.0	274	100.0

Table 8.14 Involuntary, Voluntary, Unavoidable and Controllable Turnover by Sex

Lmon 3-6	Av No Empl.	Invol No.	Invol % pa	Vol No.	Vol % pa	Unav No.	Unav % pa	Cont No.	Cont % pa	Total No.	Total % pa
M	365.0	13	10.7	43	35.3	9	7.4	47	38.6	56	46.0
F	882.5	29	9.9	182	61.9	32	10.9	179	60.8	211	71.7
T	1247.5	42	10.1	225	54.1	41	9.9	226	54.3	267	64.2
Lmon 7-14											
M	385.0	15	5.8	24	9.4	7	2.7	32	12.5	39	15.2
F	884.0	152	25.8	83	14.1	36	6.1	199	33.8	235	39.9
T	1269.0	167	19.7	107	12.6	43	5.1	231	27.3	274	32.4

Key: Lmon = Leaver month M = Male F = Female T = Total
Unav = Unavoidable Cont = Controllable

partly a result of the large number of females employed in occupations normally associated with high rates of labour turnover (most notably non-craft production (380 women) and office workers (206 women)). This aspect is considered in Table 8.16 below.

We can also distinguish between two further types of turnover: controllable and unavoidable turnover. Clearly, companies concerned with keeping low turnover rates are primarily concerned with that part of total turnover that is controllable. Non-controllable, or unavoidable, turnover is considered to be due to retirement, illness, death and pregnancy in the list given in Table 8.13. All other leavers are deemed to have left for controllable reasons.

The major part of turnover is clearly controllable. In the first period (4 months), there were 41 leavers where the decison was unavoidable, this being 15.4% of the 267 total number of leavers at this time. The figures for the second and longer period were almost identical; 43 leavers for unavoidable reasons out of a total of 274.

It is worth considering whether the number of males and females leaving the company for voluntary reasons is randomly distributed across the different length of service categories; see Table 8.15. It is clear that both male and female leavers are concentrated in low length of service categories. Confirmation of this can be derived from applying a Chi-Square test to the female leaver distribution. (Insufficient numbers in most of the length of service bands prevent us from running such a test on the male distribution). Combining (a) the number of female leavers in the 5-6 and 6-11 year categories (3 and 18 respectively), and (b) treating

Table 8.15 Completed Length of Service Distributions For Company Employees

Compl. Service Group	No. in relevant Service Category			Voluntary Leavers Male		Female		Total	
	M	F	T	No.	%	No.	%	No.	%
0- 1	135	449	584	39	28.9	99	22.0	138	23.6
1- 2	88	288	376	20	22.7	91	31.6	111	29.5
2- 3	27	92	119	2	7.4	25	27.2	27	22.7
3- 4	22	67	89	3	13.6	15	22.4	18	20.2
4- 5	15	51	66	-	-	10	19.6	10	15.2
5- 6	5	32	37	-	-	3	9.4	3	8.1
6-11	79	188	267	1	1.3	18	9.6	19	7.1
11-16	68	105	173	2	2.9	4	3.8	6	3.5
16-21	20	29	49	-	-	-	-	-	-
21-26	17	13	30	-	-	-	-	-	-
26 +	26	12	38	-	-	-	-	-	-
Total	502	1326	1828	67	13.3	265	20.0	332	18.2

all those with service of more than 11 years as one group for statistical purposes, we observe a χ^2 value of 59.3. With the critical value for (7-1) degrees of freedom at the .01 level standing at 12.6 we are obliged to accept the hypothesis that the distribution of female leavers varies according to length of service. Employees with eleven or more years service clearly have a high degree of stability; only two males out of 131 and 4 females out of 159 left for voluntary reasons.

Table 8.16 compares the annualised leaving rates (voluntary and total) of each occupation over the two periods. Particularly noticeable is the fall in the voluntary quitting rates in the three occupations office workers, non-craft production and other manual. Here, the (annualised) rate fell by two-thirds in the aftermath of the twilight lay-off (4). Clearly then, this lay-off

Table 8.16 Voluntary and Total Turnover Broken Down by Occupation (*)

	Lmon 3 - 6				Lmon 7 - 14			
	Voluntary Turnover		Total Turnover		Voluntary Turnover		Total Turnover	
Occn.	No.	%	No.	%	No.	%	No.	%
1.	2	15.4	2	15.4	-	-	-	-
2.	1	5.7	2	11.4	-	-	1	2.7
3.	2	29.3	2	29.3	3	21.4	3	21.4
4.	1	9.0	1	9.0	1	4.4	1	4.4
5.	25	33.8	30	40.5	18	11.3	28	17.6
6.	2	13.8	4	27.6	-	-	3	10.8
7.	2	11.2	2	11.2	-	-	2	5.1
8.	110	72.6	129	85.1	63	20.9	82	27.2
9.	27	42.4	36	56.5	19	14.6	31	23.9
10.	53	115.6	59	128.7	3	3.3	123	135.2
Total	225	54.1	267	64.2	107	12.6	274	32.4

(*) turnover rates here are annualised as a percentage of the average number employed in each occupation.

brought about a sharp reduction in the rate of voluntary quitting, and for certain key occupations there were no voluntary leavers in the second period.

It is also evident that the number leaving each occupational category is not randomly distributed. Applying a χ^2 test to the annualised equivalent of the numbers leaving each occupation during the first period (the lack of voluntary leavers in a number of occupations in the second period prevents us from conducting a similar analysis on leavers in this period), we get a value of 226.2, which is far in excess of the critical value for (10-1) degrees of freedom at the .01 level (21.7). In other words, some occupations in Company E have a greater tendency towards labour instability than others. Witness in particular the annualised voluntary quit rate of 115.6% for twilight workers and 72.6% for non-craft production workers.

In Chapter 5 (Tables 5.2 and 5.3) we computed estimates of the average manufacturing quit rates for males and females with different lengths of service in 1968, 1976 and 1980. The quitting behaviour in Company E can be compared with the estimates for 1980 and the relevant information is presented in Tables 8.17 and 8.18.

The results for males in Table 5.2 suggest that the starters quit rate and the core quit rate in 1980 were broadly about 20%. Contrast this with the annual quit rate for male workers in Company E who have less than one year's service (34.8%) and that for all other males (13.1%). Table 8.17 also presents male quit rates after the lay-off. An important observation here is that the starter

Table 8.17 Male Leavers by Completed Length of Service

Service Group	Full Year: No in Group	All: No.	All: Rate (% pa)	Vol: No.	Vol: Rate (% pa)	Lmon 7-14: No in Group	All: No.	All: Rate (% pa)	Vol: No.	Vol: Rate (%pa)
0-1 yr	135	47	34.8	39	28.9	113	25	33.2	19	25.2
1 yr +	367	48	13.1	28	7.6	333	14	6.3	5	2.3

Table 8.18 Female Leavers by Length of Service

Full Year

Service Group	No in Group	All: No.	All: Rate (% pa)	Vol: No.	Vol: Rate (% pa)	All - Twilight: No.	All - Twilight: Rate (% pa)
0-1 yr	449	175	39.0	99	22.0	120	30.5
1-2 yr	288	156	54.2	91	31.6	104	44.1
2 yr +	589	115	19.5	75	12.7	100	17.4

cont.

Lmon 7 - 14

Service Group	No in Group	All: No.	All: Rate (% pa)	Vol: No.	Vol: Rate (% pa)	All - Twilight: No.	All - Twilight: Rate (% pa)
0-1 yr	379	105	41.6	39	15.4	50	23.1
1-2 yr	199	67	50.5	13	9.8	15	15.3
2 yr +	537	63	17.6	31	8.7	48	13.8

quit rate does decline, but only marginally. More dramatic is the fall in quitting among core workers who have a total quit rate of 6.3% p.a. and a voluntary one of only 2.3% p.a.

Turning to female quit rates, Table 8.18, we see that the

annual quit rate of female workers with more than two years' service (core workers) was 19.5%. This was lower than the national figure of 24.6% in Table 5.3. Quitting among female starters in Company E is higher than for core workers, this being similar to the result observed in Table 5.3. However, it is a little surprising to see that the quit rate for females with 1-2 years' service is greater than for women who joined the company within the last year. This last finding still holds when considering voluntary quitting only.

It is clear then that the quit rate for short service employees is dominated by the twilight lay-off. This is especially true when considering the second period. Voluntary quitting falls after the lay-off, most notably among females with 1-2 years' service. It is also apparent that quitting among short service female employees is below that for males. The effect of excluding the twilight lay-off, which affected 122 females, is also shown in Table 8.18.

8.7 The Dynamics of Occupational Change

Here, an attempt is made to understand some of the dynamics of occupational change within the company over the period March 1980 - February 1981. This is done by presenting a series of occupation by function matrices, first for employment gains (Table 8.19) and then for employment losses (Table 8.20). In Table 8.21 we consider the respective aggregations of these two sets of matrices, while in Table 8.22 we look at the extent of labour market activity within the company over the period.

Thus, in Table 8.19 we have:

Matrix A: shows the occupational and functional area for the 584 starters who joined the company during the 12 months. Thus, 80 of the 87 office workers recruited from the external labour market were engaged in 'commercial, management and administrative services', and 207 of the 213 non-craft production workers taken on were employed in 'production operations'.

Matrix B: shows those workers who have changed occupation within the company while continuing to work in the same functional area. We can see that 4 of the 6 changes here took place within 'production operations'. Within this area two workers were made foremen, a third moved to a clerical occupation, while a fourth transferred into non-craft production.

Matrix C: shows the internal mobility for workers who change both their occupation and functional area.

Matrix D: shows the number of changes brought about by workers moving to a different functional area while maintaining the same occupation. We see therefore that 7 such changes took place during the period, 4 of them involving office workers.

While in Table 8.20 we have:

Matrix E: shows the occupational and functional area of the 209 employees leaving the company for involuntary reasons. Most of these were in the two areas 'production operations' and 'materials, control and movement', while the main occupational category to be affected

was the twilight shift which was laid-off in July 1980.

Matrix F: shows the occupation and function of those 332 employees who left the company voluntarily. Quite clearly, the main area to be affected was 'production operations' (223 voluntary leavers), while the occupation most affected by voluntary quits was non-craft production (173 voluntary leavers).

Matrix G: shows the old occupation of those 6 employees who changed their occupation while continuing to be employed in the same functional area (see also Matrix B).

Matrix H: shows the old occupation and functional area for those 6 workers who changed both their occupation and their function during the period (see also Matrix C).

Matrix I: shows the old functional area for the 7 workers who moved to a different area in the company but kept the same occupation (see also Matrix D).

These matrices provide us with enough information to help us build up a comprehensive picture of the manpower situation in the company. While there is much movement into and out of the company for example, very little movement took place within the company by way of internal transfers or promotions. Recruits numbered 87 office workers, 213 other non-craft production workers and 73 other manual employees. In all three cases, much of the recruitment undertaken by the company was to replace the large number of workers leaving during the period. For we can see from matrices E and F that the numbers

Table 8.19 Breakdown of Gains by Occupation and Function, Company E

A: STARTERS

	A	B	C	D	E	F	G	Total
1								
2	1					4	2	7
3			7					7
4						2		2
5	5	1				80	1	87
6							1	1
7		14						14
8	207						6	213
9	1	1			52		19	73
10	128		1		40	6	5	180
Total	342	16	8		92	92	34	584

B: INTERNAL MOBILITY: CHANGE OCCUPATION BUT NOT FUNCTION

	A	B	C	D	E	F	G	Total
1								
2								
3								
4								
5	1		1		1			3
6	2							2
7								
8	1							1
9								
10								
Total	4		1		1			6

C: INTERNAL MOBILITY: CHANGE OCCUPATION AND FUNCTION

	A	B	C	D	E	F	G	Total
1								
2								
3								
4								
5					1			1
6					1			1
7								
8	2							2
9					1		1	2
10								
Total	2				3		1	6

D: INTERNAL MOBILITY: CHANGE FUNCTION BUT NOT OCCUPATION

	A	B	C	D	E	F	G	Total
1								
2								
3								
4								
5			2		1	1		4
6					1			1
7								
8							1	1
9								
10							1	1
Total			2		2	1	2	7

Table 8.20 Breakdown of Losses by Occupation and Function, Company E

E: INVOLUNTARY LEAVERS

	A	B	C	D	E	F	G	Total
1								
2							2	2
3								
4								
5	2					13		15
6	4						1	5
7		2						2
8	37						1	38
9					11		10	21
10	87				35	1	3	126
Total	130	2			46	14	17	209

G: INTERNAL MOBILITY: CHANGE OCCUPATION BUT NOT FUNCTION

	A	B	C	D	E	F	G	Total
1								
2								
3								
4			1					1
5								
6	1							1
7								
8	3							3
9					1			1
10								
Total	4		1		1			6

I: INTERNAL MOBILITY: CHANGE FUNCTION BUT NOT OCCUPATION

	A	B	C	D	E	F	G	Total
1								
2								
3								
4								
5	2					2		4
6	1							1
7								
8	1							1
9								
10	1							1
Total	5					2		7

F: VOLUNTARY LEAVERS

	A	B	C	D	E	F	G	Total
1	1					1		2
2						1		1
3			5					5
4						2		2
5	4		2		2	35		43
6	1	1						2
7		2						2
8	170						3	173
9	1				39		6	46
10	46				6	3	1	56
Total	223	3	7		47	42	10	332

H: INTERNAL MOBILITY: CHANGE OCCUPATION BUT NOT FUNCTION

	A	B	C	D	E	F	G	Total
1								
2								
3								
4								
5						1		1
6								
7								
8	3							3
9					2			2
10								
Total	3				2	1		6

leaving the three occupations office work, non-craft production, and other manual were 58, 211 and 67 workers respectively. No real expansion therefore took place in the number employed in non-craft production or the other manual category.

Aggregating the gain matrices (603 workers) and the loss matrices (560 workers) and subtracting the latter from the former gives the net change matrix in Table 8.21. Total employment expanded by 43 this being a 3.5% increase over the year. It is immediately clear that the majority of the employment gains were attributable to recruitment from the external labour market; 584 workers were recruited in this way accounting for 96.8% of total gains. By contrast, movement within the firm was limited; less than 1% of those employed in March 1980 (12 workers) changed their occupation during the year. This seems to suggest that the internal labour market in Company E was virtually non-existant, the firm relying on the external labour market for almost all its labour requirements. Indeed, the only internal labour movement of any significance taking place within the company during the 12 months appears to be the promotion of 3 workers to foremen and the movement of 4 workers into clerical occupations.

We see from the net change matrix that there had been a considerable increase in the number of craftsmen employed by the company; 14 such workers joined the company from the external market during the year, while 4 left. This net increase of 10 workers represents a 19.2% increase in the number of craftsmen. It is interesting to note that the company was clearly protecting its

Table 8.21 Net Change Matrix. Occupation and Function

Occn.	A	B	C	E	F	G	Total	% of initial stock
1	-1				-1		-2	-5.0
2	1				3	0	4	7.5
3			1				1	5.0
4					0		0	0
5	-2	1	1	1	30	1	32	14.3
6	-5	-1		2		0	-4	-8.9
7		10					10	19.2
8	-4					3	-1	-0.2
9	0	1		0		4	5	2.6
10	-6		1	-1	2	2	-2	-1.5
Total	-17	11	3	2	34	10	43	3.5
% of inital stock	-2.8	15.9	7.1	1.1	13.5	11.6	3.5	

position and recruiting craftsmen to replace those who are due to retire in the near future (see section 8.4 above). Employment in 'installation, maintenance and repair' expanded by 15.9%, this being almost entirely due to the increase in craftsmen. Other interesting changes include the 7.5% increase in professional and related workers and the 8.9% decline in foremen. Regarding foremen it must also be said that despite the contraction in numbers (5 left involuntarily and 2 left voluntarily), only 1 worker was recruited to this category from the external labour market while 3 workers were promoted internally. There was also a 14.3% increase in the number of office workers employed by the firm. Once again, the company relied almost exclusively on the external labour market when recruiting clerical staff; out of a net increase of 32 during the year only 4 were recruited internally. Mention should also be made of the large increase in the number of workers employed in 'commercial, management

and administrative services' (13.5%), as well as the marginal decline in the number in 'production operations' (2.8%).

We are now in a position to measure the level of labour market activity for workers in different occupations and functional areas. Here, we are only interested in those movements initiated by the individual, for it is this that the company is mainly concerned with. Hence, we confine our analysis of labour market activity to workers who leave voluntarily and those who change their occupation and/or functional area within the firm. To do this we take the matrix of gross losses (not shown) and subtract any losses due to involuntary leaving (matrix E, Table 8.20). The cell totals are then expressed as a percentage of the total number employed in that occupation and function in March 1980, see Table 8.22. The extent of labour market activity is of considerable importance when the company is trying to undertake any sort of manpower planning excercise.

Labour market activity was lowest for professional workers, engineers and scientists as only 1.9% of these workers left the company voluntarily or changed jobs within it during the year. At this rate of labour market activity, it would take more than 26 years for half of the jobs at this level to change hands. Craftsmen also tend to display a high degree of stability with only 2 voluntary leavers (3.8%) from 'installation, maintenance and repairs'. Labour market activity also appears to be low among managers and office supervisors.

The greatest degree of labour market activity occured among twilight workers, with 42.9% making a voluntary change during the

Table 8.22 Labour Market Activity = Gross Loss Minus Involuntary Leavers as a % of the Number Employed at the Beginning of the Year (*)

	Function						
Occn.	A	B	C	E	F	G	Total
1.	9.1				5.0		5.0
2.			0.0		2.9		1.9
3.			40.0				30.0
4.	0.0				8.0		5.9
5.	23.1		33.3	9.5	23.5	0.0	21.5
6.	15.0	12.5		0.0			8.9
7.		3.9					3.8
8.	40.0					27.3	39.6
9.			0.0	32.3		12.5	25.8
10.	47.5			40.0	37.5	9.1	42.9
Total	38.1	4.3	19.0	27.8	17.9	11.6	28.2

(*) Cells are only represented when the number employed in a given occupation and function is 6 or more. These 25 cells accounted for 1206 of the 1244 (96.9%) employees at the beginning of the year.

year. However, not too much emphasis should be placed on this group of workers because of the unusual nature of the twilight work. There is also a high degree of labour market activity among technicians, office workers, non-craft production and other manual employees. Non-craft workers are almost entirely concentrated in 'production operations' and 40% of these indulged in some form of labour market activity. Among other manual workers, there is a marked difference in the level of labour market activity between those employed in 'materials control and movement' (the warehouse area) where it is high (32.3%), and those in 'miscellaneous services' where it is low (12.5%). The level of labour market activity among office workers can also be seen to vary between different functional areas, although most are employed in 'commercial, management and administrative services' where the level of labour market activity was 23.5%.

Finally, it would seem as though the company is experiencing some difficulties with those technicians employed in 'organisation and support'. One third of this group of 15 workers leave the company for voluntary reasons, and one transfers to a different occupation within the same functional area. This forces the company to recruit a number of technicians (7 in all) from the external labour market as replacements.

Regarding the functional areas we see from Table 8.22 that there is fairly extensive labour market activity in 'production operations'. Nearly 4 out of every 10 workers employed here engaged in some sort of movement (other than leaving the company involuntarily); 223 workers left the company voluntarily, 8 workers moved to different areas within the firm, and another 4 changed their occupation while remaining in production. Labour market activity was also high in 'materials, control and movement' (27.8%) and lowest in 'installation, maintenance and repair' (4.3%).

It must be concluded therefore that internal labour markets within the company are not well developed. No established 'lines of progression' (with the possible exception of a career ladder leading to the position of foreman) seem to exist. Although labour market activity is extensive in some occupations and some functional areas, this is almost entirely the outcome of voluntary quitting. Such activity tends to predominate among twilight and non-craft production workers, and such employees do seem to exhibit the instability associated with secondary sector employees. Those areas most affected by the high percentage of workers leaving certain occupations include

'production operations' (36.2% of the workers employed here left voluntarily during the 12 months) and 'materials control and movement' (26.1% of the workforce in this area left voluntarily over the same period).

Two important points need to be made however. First, up to now we have considered labour market activity in one relatively short period of time (March 1980 - February 1981) and it may well be that the rate of voluntary leaving in this year might not have been typical. In particular, we have noted the dramatic fall in the level of voluntary quitting when the twilight shift lay-off took place in July 1980. Secondly, because a very high percentage of workers in the company (over 80%) can be found in semi- or unskilled jobs, the company may deliberately refrain from developing an internal labour market, believing that the low levels of skill required for many of its jobs mean that there is little to choose between the majority of their workers and workers in the external labour market. Minimal training is needed for most of the tasks and the company can make extensive use of secondary sector employees. High quitting can ensure a rapid adjustment of the labour force, especially in production, to changes in market conditions. In particular, the company does not have to indulge in the expensive practice of labour hoarding when there is a fall in demand. In spite of turnover rates that can be close to 100% p.a. in some occupations, the company does not consider it has a turnover problem.

8.8 Footnotes

(1) The evidence in the case studies suggests that the posts of office supervisor and foremen are almost exclusively filled by internal promotion. It thus appears that females have to prove themselves over a much greater length of time than males before being considered for promotion to office supervisor.

(2) However, if we were to examine the relationship properly, we would need to look at the relationship between age-at-joining and completed length of service. Unfortunately this was not possible in any of our case studies because the numbers leaving from each length of service category, particularly when broken down by occupation, were too small to provide adequate frequency distributions.

(3) We stress the term voluntary here because although older workers also tend to be stable, retirement (i.e. involuntary turnover) may force them to leave a firm at a time when they might otherwise have liked to continue working.

(4) Although it might appear from Table 8.16 that there was also a substantial fall in the number of twilight workers quitting for voluntary reasons in the second period, it must be remembered that the company only started re-employing workers on the twilight shift in January 1981 - i.e. one month before the end of the second period .

8.9 Appendix: Definition of Functional Areas

The classification of manpower by function is based on the following seven category schema. The classification was based on one given in the Department of Employment (1972) and was designed to be generally applicable to all three companies in the study. Clearly, some of the functions listed below may not be present in some of the companies, while others will have different names in different companies. Nevertheless, the system should cover all of the departments and functions to be found in each company, although there will be some cases where an individual or department's function overlaps one or more of our categories and some arbitrary allocations have had to have been made.

General Functional Area	Activities and Departments Included
(1) PRODUCTION : OPERATIONS	Materials processing Manufacturing Assembly Inspection Works Management Production control (Utility Services)
(2) PRODUCTION : INSTALLATION, MAINTENANCE & REPAIR	Machinery and plant installation, maintenance and repair Building maintenance Maintenance of grounds and gardens
(3) PRODUCTION : ORGANISATION AND SUPPORT	Production engineering and planning Technical quality control Technical service advice (Drawing office) (Operational research) (Organisation and Methods) (Work study; industrial engineering)
(4) RESEARCH & DEVELOPMENT	Technical and scientific research, development, design, etc.
(5) MATERIALS CONTROL & MOVEMENT	Warehousing, Storekeeping Packaging Materials handling and moving (internal) Transporting, despatch
(6) COMMERCIAL MANAGEMENT & ADMINISTRATIVE SERVICES	(a) Financial Services: Budgetary, financial control Costing Estimating Investment, Insurance

Cont./

Appendix 8.2 cont.

General Functional Area	Activities and Departments Included
	(b) Marketing and Sales: Sales administration, marketing, advertising, publicity, P.R. Industrial design, photography Field sales
	(c) Purchasing: Materials Purchasing (Materials Manning)
	(d) Personnel Services: Recruitment allocation and industrial relations
	(e) General Administrative Services: Legal Company secretarial Property management Records, Library Information
	(f) Other Management Services: Economics, Statistics Computer Services
	(g) (Product Support)
(7) OTHER (COMMON & MISCELLANEOUS SERVICES)	(Office management and general clerical services) Communications Catering Security Cleaning (Welfare and health)

Note: the activities bracketed in the list above are those, all or part of which may, in some companies, be considered to fall into other functional areas.

Chapter 9 Company D

9.1 Introduction

Company D is a high techonology/skill intensive company located in the Aerospace industry. Employing well over 3,000 workers when the case study commenced in mid-February 1980, Company D is part of a larger group of companies and there is an important movement of manpower between the different companies in it. During the year of study the company experienced an expansion of 5.6% in the total number employed and 118 of the 416 starters were workers who transferred from associated companies. Length of service is taken to be service with the Group rather than service with Company D. The Group's figure for starters is inflated because all trainees are kept on the payroll of the Group head office. This is of considerable importance as some 250 apprentices are being trained within Company D but they are not included in the stock position. In fact they are excluded from this study until they become skilled craftsmen, at which point they are transferred from head office and recorded as starters on the payroll of Company D. The analysis of the stock position showed that 12.0% of the workforce were female and that 54.7% came in the manual category. However, if this percentage is to be compared with the other companies, then account should be taken of the number of apprentices. Making this adjustment increases the importance of manual workers to 58.0%.

9.2 Sex and Occupational Status

Company D contains 3,204 employees, the majority of whom are male (2819, or 88.0%). Table 9.1 shows the sex breakdown of the

Table 9.1: Occupational Distribution of Manpower

Occupation	Males	Females	Total	% of 3204
1. Managers	44	-	44	1.4
2. Professional and Related	45	8	53	1.7
3. Engineers, Scientists, etc.	224	3	227	7.1
4. Technicians, etc.	341	16	357	11.1
5. Office Workers (*)	355	295	650	20.3
7. Office Supervisors	106	14	120	3.7
All Non-Manual	1115	336	1451	45.3
8. Foremen	123	-	123	3.8
9. Craftsmen	1102	2	1104	34.5
10. Non-Craft Production	221	9	230	7.2
11. Other Manual	258	38	296	9.2
Total: All Occupations	2819	385	3204	100.0

(*) In subsequent tables, male office workers are given the number 5 and females the number 6.

workforce in broad occupational categories. More than half (1,753 workers) fall into the manual category, the majority of these being craftsmen (1104 workers). Of the 1451 non-manual workers, more than half are office workers (650 clerks, typists, secretaries, etc., and 120 supervisors). We have decided to treat male and female office workers separately in the subsequent analysis because we feel that the large size of each group will make it possible to test for sex differences in length of service and turnover here. The importance of clerical occupations to the female group can be seen from the fact that the 295 females employed as office workers account for over three-quarters of the total female workforce. The male workforce by contrast is much more evenly distributed among the various occupations.

Perhaps the most noticeable feature regarding the occupational distribution of the company's workforce is the large number of skilled workers it employs. For example, almost 40% of all employees are craftsmen or foremen. This is to be expected however particularly when one bears in mind the nature of the industry in which the firm is operating. It is a high technology company with graduate level engineers and scientists accounting for 7.1% of the labour force, and technicians making up a further 11%. Management and supervisors (both in offices and on the shop floor) employ another 287 workers (8.9% of the workforce), but only 14 are female.

9.3 Functional Area

Table 9.2 gives the distribution of the labour force between eight functional areas. The nine employees allocated to 'suspense' are those not currently working in the company due to maternity leave, long-term sickness, etc., but who are nevertheless

Table 9.2: Distribution of Employment by Functional Area

Functional Area	Number	% of Total
A. Production: Operations	1518	47.4
B. Production: Installation, Maintenance and Repair	293	9.1
C. Production: Organisation and Support	243	7.6
D. Research and Development	328	10.2
E. Materials Control and Movement	331	10.3
F. Commercial, Management and Administrative Services	413	12.9
G. Other (Common and Miscellaneous Services)	69	2.2
H. Suspense	9	0.3
Total: All Functions	3204	100.0

still on the payroll. Nearly half (47.4%) the company's workforce are directly involved in 'production operations' with the other two main areas linked to production ('installation, maintenance and repair' and 'organisation and support') making up a further 16.7% of the labour force. 'Research and development' is an important activity as 10.2% of the labour force are employed in this area. Employment in service areas (categories F and G) account for 15.1%, this being a lower proportion than in Companies E and A.

Table 9.3 presents a breakdown of the labour force into eleven occupations and eight funtional areas. A comparison of the occupational distribution in each area may be of interest. We see that the largest area, 'production operations', is highly skill intensive, with almost two-thirds of its workers employed either as craftsmen or foremen. Similarly, there are a large number of skilled employees in 'installation, maintenance and repair' with more than

Table 9.3: Occupation by Function Matrix

	Function							
Occn	A	B	C	D	E	F	G	H
1.	14	3	3	7	1	16	0	0
2.	0	1	0	1	0	43	8	0
3.	26	3	47	135	3	13	0	0
4.	30	18	129	120	4	56	0	0
5.	109	43	23	7	59	106	5	3
6.	22	11	29	21	44	135	32	1
7.	28	5	10	0	33	40	4	0
All N-M	229	84	241	291	144	409	49	4
8.	89	18	1	2	9	4	0	0
9.	884	129	1	33	55	0	0	2
10.	227	0	0	0	3	0	0	0
11.	89	62	0	2	120	0	20	3
All Occs	1518	293	243	328	331	413	69	9

half the manual workforce falling into the craftsmen and foremen categories. Another 30% of workers in this area are non-manual, with the remainder being employed in the other manual category. Contrast this with 'organisation and support' (this area includes such activities and departments as engineering and planning, technical and quality control, the drawing office, etc.) which is almost entirely non-manual. Over half are technicians and a further fifth are engineers or scientists, etc. 'Research and development' is also predominantly non-manual, although a small proportion of craftsmen (about one tenth) can be found here. Engineers, scientists and technicians account for almost 80% of the total workforce in this area, with well over half of all qualified engineers and scientists employed by the company (135 out of 227) working in 'research and development. 'Materials, control and movement' is more or less evenly divided between manual and non-manual workers. The most important category here is the other manual one (warehouse and stores employees) which account for 36.3% of the number employed. 'Commercial, management and administrative services' is an almost entirely non-manual function. As expected, there is a high clerical component here; 58.4% are office workers, and a further 9.7% are office supervisors. Almost all professional and related workers (43 out of 45) can be found in this function. Finally, 'other common miscellaneous services' including catering, security, cleaning, etc., consists mainly of female clerical workers (46.4%) and other manual workers (29.0%).

Apart from the contrasts between the occupational mixes of the different functions it is also interesting to note that it is

male clerical workers that dominate in 'production operations' and 'installation, maintenance and repair'. This suggests that male manual workers in these functions may get promoted to office work as the need arises. Alternatively, it may be that there is a preference for male clerical workers in such a male dominated activity.

9.4 Age Structure

Table 9.4 shows Company D's age distribution in 5 year intervals, and it is clear that it is heavily skewed towards the upper range of the age spectrum. Nearly half the workforce (46.8%) are over 50, with an overall mean age of 44.8 years and a median of 48.6 years. As expected, the female distribution is bimodal with comparatively few women in the 25-44 age range due to factors such as

Table 9.4: Age Distribution of Male and Female Workers

	Company A			Economically Active Population (*)	
Age Group	Males (%)	Females (%)	Total (%)	Males (%)	Females (%)
15-19	1.3	11.0	2.5	6.8	11.0
20-24	11.1	17.1	11.9	11.5	13.2
25-29	7.8	8.8	7.9	11.1	8.1
30-34	6.6	6.0	6.6	10.1	7.7
35-39	6.1	6.3	6.2	9.1	9.4
40-44	8.2	8.9	8.4	10.1	10.9
45-49	9.6	12.0	9.9	10.6	12.1
50-54	14.4	12.4	14.1	9.6	10.5
55-59	20.3	17.1	19.9	9.4	9.0
60-64	13.9	0.5	12.3	7.7	5.2
65+	0.5	-	0.5	3.2	2.8
All ages	100.0	100.0	100.0	100.0	100.0

* This column refers to the local labour market, in this case the South West Region: Northern Sub-Division.

Source: Census 1971, England and Wales, Economic Activity, Sub-Regional Tables (10% sample), Table 5.

marriage and family commitments. However, with only 12.0% of the company's workforce being female this does not explain the bimodal distribution for the workforce as a whole. What is more, despite the bimodality of the female distribution, the female population in the company is much more heavily concentrated in the lower age ranges than the male. However, the treatment of apprentices is clearly distorting the percentage of the male labour force which is aged 15-19. Even so, it is clear that the unusual feature of Company D's age distribution is the outcome of the age mix among its male workforce.

There are some important differences between the male distribution found in Company D with that of economically active males in the relevant region. Particularly noticeable is the abnormally high proportion of older male workers in the company; while 49.1% of the male workforce is aged 50 and over, only 29.9% of the working population can be found in this age group.

The fact that the male age distribution is heavily skewed towards the upper end of the range might have serious consequences for the company. We see, for example, that 14.4% of the male workforce are over 60, so we can expect retirements to run at almost 3% p.a. in the years 1980-84. Much more serious is the bulge in the 55-59 age bracket where one fifth of all males are to be found. Here, the firm can expect to lose 4% p.a. through retirement in the years 1985-89. Clearly then, if the firm fails to make adequate plans to train younger workers as replacements for the high proportion of older workers retiring from key occupations, much disruption could result.

Table 9.5 gives the age distribution for different occupations. Within the manual occupations, the greatest concentration of older workers aged over 55 occurs in the other manual category. However, craftsmen is the critical category and here there are some disturbing features; 45% are aged 50 and over and only 19% are aged 30-44. Clearly, serious consequences could result from this over a fifteen year period. However, it would appear that the company has recognised the potential problem by recruiting a large number of young craftsmen so that 185 craftsmen (or 16.8%) with the

Table 9.5 Age Distributions for different Occupations in Company D

Age (Years)	1	2	3	4	5	6	7	8	9	10	11
15-19	0.0	0.0	0.4	1.1	5.1	12.5	0.0	0.0	0.1	1.7	5.1
20-24	0.0	1.9	0.4	10.9	9.3	21.4	0.0	0.0	16.8	10.9	10.8
25-29	0.0	13.2	4.8	14.3	7.9	9.8	2.5	1.6	9.2	6.1	2.7
30-34	0.0	15.1	4.8	8.7	4.5	5.4	7.5	6.5	6.7	8.7	5.4
35-39	6.8	17.0	9.3	5.9	4.5	6.4	9.2	8.1	4.7	7.4	5.7
40-44	13.6	7.5	12.3	9.2	7.9	6.4	10.0	12.2	7.6	8.3	6.4
45-49	11.4	7.5	12.8	8.7	8.5	11.2	10.0	13.0	9.7	7.8	10.8
50-54	13.6	13.2	21.1	12.3	12.4	12.2	18.3	21.1	13.0	13.9	15.2
55-59	27.3	17.0	19.8	18.2	21.1	13.9	26.7	24.4	19.7	17.8	23.6
60-64	27.3	5.7	13.7	10.6	18.3	0.7	15.8	13.0	11.7	17.0	13.5
65+	0.0	1.9	0.4	0.0	0.6	0.0	0.0	0.0	0.7	0.4	0.7
Total	100	100	100	100	100	100	100	100	100	100	100
Mean	53.5	43.4	49.3	43.2	46.1	36.8	50.3	50.4	44.2	45.6	46.5
Median	55.5	42.3	51.8	44.4	50.8	35.8	52.8	51.9	47.9	49.5	51.4

firm are aged 20-24. The company is also training a further 250 apprentices who will be in the 15-19 age range. Turning to the foremen and supervisor categories, there are very few workers aged under 30, suggesting that it is difficult to reach this level at a young age. By contrast, a high proportion of workers in these categories are aged 55 and over (one third or more). However, unlike in the craftsmen occupation, there is a good spread of workers in the lower age ranges, and there would not appear to be any major or potential problems here as the company seems to have adopted an active policy of promoting craftsmen and office workers to foremen and supervisory levels respectively after the age of 30. We also see that no manager is under 35 years of age, while 68.2% are aged over 50. As these older managers begin to retire they will most likely be replaced by workers promoted from the engineering, scientific, and professional and related occupations. There are also large numbers of engineers and scientists concentrated in the older age categories (55.0% are over 50), although the company seems to have made adequate provision for replacements, there being a significant minority of engineers and scientists in the lower age ranges. One possible line of progression within the company is from technician to engineer, and the former occupation has a large proportion in the lower age ranges (35.0% are under 35). The professional and related group is distinctive because it has 45.3% in the narrow age band 25-39. Finally, there is also a high proportion of older workers in the male office worker category where 52.4% are aged 50 or more.

Table 9.5 also provides us with the mean and median ages of workers in different occupations. Here, all but two occupations

(professional and related and female office workers) have values for the median age greater than the mean, reflecting a tendency within the company to have age distributions skewed towards the upper ranges. With one or two exceptions however there is nothing unusual about the distribution of the mean and median ages, there being a gradual decline from the group with the highest average ages (managers) to that with the lowest (female office workers). One surprise however is that craftsmen have the lowest average age (mean and median) of the four manual groups. Another is the significant difference in both the mean and median ages of male and female office workers.

9.5 Labour Force Stability

Table 9.6 shows the distribution of the male and female labour force between broad length of service categories, and it does appear, superficially at least, that there is greater stability among male employees than among females. For example, the mean length of service for males is 15.5 years compared with a female one of 8.3 years. What is more, the median statistics for the two distributions suggest that the female length of service distribution is much more heavily skewed towards the lower end than is the male. In addition to this, while only 7.4% of males have less than 1 year's service, twice as many females do (15.3%). Similarly, while only a quarter of the male population (26.7%) has no more than 5 years' service with the company, more than half the women (51.2%) do. Moreover, three times as many men have 20 years' service or more than females (36.4% compared with 11.9%).

Table 9.6: Length of Service Distributions

Service group (years)	Males (%)	Females (%)	Total (%)
0 -0.5	2.8	6.5	3.3
0.5-1.0	4.6	8.8	5.1
1.0-1.5	3.7	5.2	3.9
1.5-2.0	2.3	5.5	2.7
2.0-2.5	1.8	3.4	2.0
2.5-3.0	2.1	6.5	2.6
3.0-3.5	2.2	3.6	2.4
3.5-4.0	1.3	4.9	1.7
4.0-4.5	3.8	2.3	3.6
4.5-5.0	2.1	4.4	2.4
0 - 5.0	26.7	51.2	29.7
5 - 6	4.3	8.3	4.7
6 - 7	4.8	3.1	4.6
7 - 8	1.2	2.6	1.4
8 - 9	1.5	2.6	1.7
9 -10	2.8	1.3	2.7
5 -10	14.6	17.9	15.1
10 -15	11.2	10.9	11.2
15 -20	11.1	8.1	10.7
20 -25	8.8	4.4	8.3
25 -30	15.4	4.4	14.0
30 +	12.2	3.1	11.1
All lengths	100.0	100.0	100.0
Mean (years)	15.5	8.3	14.6
Median (years)	13.4	4.7	12.4

Perhaps the most remarkable aspect of Table 9.6 is the substantial proportion of male employees with exceptionally long service; 27.6% have been with the company for more than 25 years. An important segment of the male labour force has been with the company for all, or a major part, of their working lives. A few female workers also have exceptionally long service, and almost one third (30.9%) have been with the company for more more than ten years.

Taking one year groupings, the proportion of male workers

falls steadily up to the 3-4 year group, rises in the 4-5 year group, and then more or less falls thereafter. Similarly, in the female case, the proportion falls up to the 4-5 year group, rises in the 5-6 year group, and falls after that. Such distributions could not have occured in a firm where the number employed remained constant over time and the number recruited to replace those who left were taken from a single population with given characteristics. We have already considered two possible causes for the emergence of such a distribution in Chapter 8. Just to recap, they might result from:

(a) the size of the workforce changing over time

(b) the company recruiting its workers from a number of different populations over time. (For example, different 'types' of workers may present themselves to the firm for work at different times, depending on factors such as the economic climate.

We are unable to examine the validity of the first cause however due to a lack of data regarding the company's previous employment history. It is quite possible however that the second reason played some role in determining the company's length of service distribution. For example, the relatively large proportion of males in the 4-5 years' service group and females in the 5-6 years' service category may be partly due to the firm recruiting relatively stable male workers in 1976 and females during 1975. These workers may be relatively more stable than workers recruited in other years for a number of reasons, including the age at which they were recruited and their occupation. Later we shall be examining how these length of service distributions can vary between occupations and age groups.

Returning to the differences in the male and female service distributions, opinions vary as to the relevancy of comparing such distributions without first holding factors such as age, occupation, pay, etc., constant. For once these factors are held constant, it is argued that the difference in the labour force stability is much less than is commonly supposed. An attempt is made here to examine this hypothesis, concentrating mainly on the differences in the labour stability of male and female office workers. We choose this particular group because of insufficient female workers in any of the other occupational categories. If it were to turn out that all office workers (i.e. both male and female) tend to be more unstable than the average for the company, then the low average length of service of women can be attributed to the fact that the majority of them are office workers, not because they are women.

We see from Table 9.7 that the lowest length of service for males is in the other manual occupation where the mean is 7.7 years. One-eighth of this occupational category are female, and their mean length of service was, at 7.1 years, only marginally lower than that for males. In fact, when we compare their respective median lengths of service (not shown), the female median is higher than that for males (4.8 years compared with 4.4 years). The second lowest length of service for males was for clerical workers who had a mean of 10.4 years, this being 41% greater than the mean length of service for female clerical workers. In addition, the distributions shown in Table 9.8 indicate that there are proportionately more short service female office workers than male; 10.4% of males have less than 1 year's service compared with 16.3% of females. Moreover, only 9.5% of

Table 9.7 Mean Length of Service Distributions for Individual Occupations Broken Down by Sex

	Non-manual						Manual				All
	1	2	3	4	5	7	8	9	10	11	
M	24.3	15.9	23.7	17.0	10.4	20.4	25.5	15.4	12.7	7.7	15.5
F	-	8.2	16.4	12.8	7.4	12.5	-	28.4	19.0	7.1	8.3
R	-	1.94	1.45	1.34	1.41	1.63	-	0.54	0.67	1.08	1.87

M = males, F = females, R = ratio of males to females.

women have more than 20 years' service while almost twice as many males (18.4%) do. (Only other manual workers have as high a proportion of workers in short service groups and as small a proportion in long service groups as female office workers). In between either extreme, however, there is little difference between the sexes, with the proportion of males and females with 5 to 10 years' and 10 to 15 years' service being almost identical. Thus, despite the fact that the difference in their means is less than the difference in the means for all men and all women workers, there are larger proportions of very short service women than men. Of course, it may well be that these differences would be reduced even further if men and women in specific clerical occupations were compared, and the introduction of the age variable might be useful (see Table 9.11).

The only other occupations where women account for more than 10% of the workforce are professional and related and office supervisors. In both cases the male average length of service is

considerably greater than that for females. This observation for office supervisors is different from that in Company E, see Chapter 8.5. If this position is attained by internal promotion, it does seem to suggest that this occurs more rapidly for females than for males. Women with high ability perhaps get promoted quite quickly, although long service for male clerical workers more often leads to promotion.

It might also be worth noting that the two occupations in which there are no female workers, managers and foremen, have the longest average lengths of service (both means and medians). Clearly then, these two critical categories of manpower have immense accumulated knowledge and experience of the company.

Table 9.8 presents the length of service distributions broken down by occupation. The two groups to exhibit the greatest stability in the non-manual category are managers and engineers and scientists. Nearly 50% of managers for example have 25 years' service or more, while just over 50% of engineers and scientists enjoy similar lengths of service. Compare this with 22.6% of professional and related workers found in the same service group. Office supervisors also display great stability with 45.8% having more than 20 years' service. It is also interesting to note that, almost without exception, all managers and office supervisors have more than 3 years' service, suggesting that such positions are usually gained by internal promotion.

Turning to the manual group, foremen exhibit the greatest degree of stability. Only 4.8% have less than 5 years' service and it is clear that the position of foreman is also achieved by internal

Table 9.8 Length of Service Distribution for Non-Manual Occupations in Company D

% of total number in each occupation

Length of Service (years)	Non-manual						Manual				
	1	2	3	4	5	6	7	8	9	10	11
0 - 0.5	0.0	0.0	0.9	3.6	4.2	7.8	0.0	0.0	2.4	3.0	6.4
0.5 - 1	2.3	0.0	2.2	5.3	6.2	8.5	0.8	0.0	4.4	5.6	10.1
1 - 2	0.0	7.5	0.9	3.1	10.4	11.2	0.8	0.8	4.8	10.9	14.9
2 - 3	0.0	7.5	0.0	4.2	6.8	11.5	0.8	1.6	2.6	5.7	8.8
3 - 4	2.3	5.7	1.8	2.2	5.4	10.5	1.7	0.8	3.3	5.7	4.4
4 - 5	2.3	7.5	1.3	3.9	7.3	5.8	3.3	1.6	7.0	5.7	10.1
0 - 5	6.9	28.2	7.1	22.3	40.3	55.3	7.4	4.8	24.5	36.6	54.7
5 - 10	9.1	11.3	5.3	16.5	18.0	16.6	11.7	1.6	16.8	13.9	17.6
10 - 15	9.1	22.6	10.1	11.5	12.7	11.2	14.2	4.9	11.5	11.3	8.1
15 - 20	13.6	3.8	12.3	6.4	10.7	7.5	20.8	15.4	11.7	10.0	9.5
20 - 25	13.6	11.3	13.7	9.8	6.8	4.1	15.8	13.8	8.0	6.5	4.1
25 - 30	11.4	9.4	20.7	18.8	7.9	2.7	15.0	29.3	17.5	13.0	4.4
30 +	36.4	13.2	30.8	14.6	3.7	2.7	15.0	30.1	10.1	8.7	1.7
Total	100	100	100	100	100	100	100	100	100	100	100
Mean	24.3	14.7	23.6	16.9	10.4	7.4	19.5	25.5	15.4	12.9	7.7
Median	23.5	11.3	25.3	14.7	6.5	4.1	18.7	26.0	13.4	9.9	4.6

Means and medians given in years.

promotion. Hence, it should come as no surprise to see that 60% of foremen have been with the company for more than 25 years. Craftsmen are the second most stable manual group followed by non-craft and other manual workers. As in Company E, such a hierarchy conforms with expectations.

Finally, before turning to look at turnover rates and internal mobility we need to consider the relationship between length of service and age, including age-at-joining. In Table 9.9 we see the expected correlation between age and length of service: as age increases so too does length of service. Care is needed however when

Table 9.9 Mean and Median Lengths of Service by Age Group, Males and Females

Age (years)	Males Mean	Males Median	Males Number	Females Mean	Females Median	Females Number
15–19	1.4	1.3	38	1.2	0.7	42
20–24	3.8	4.4	313	3.1	3.2	66
25–29	5.9	5.7	221	6.4	5.8	34
30–34	7.5	6.3	186	5.2	4.4	23
35–39	10.5	10.9	172	8.8	4.7	24
40–44	14.0	15.0	233	10.3	5.5	34
45–49	17.2	19.0	271	10.5	7.0	46
50–54	20.5	23.9	406	11.8	7.6	48
55–59	20.8	23.2	572	14.3	13.5	66
60–64	24.0	26.1	392	15.7	0.4	2
65 +	24.8	24.7	15	–	–	–
All	15.5	13.4	2819	8.3	4.7	385

interpreting these figures since there is a spurious element in the correlation due to the fact that young workers cannot have long lengths of service. Nearly half the male workforce are over 50 years old, and such workers have an average length of service which is close to, or greater than, 20 years. These are very long lengths of service and are indicative of considerable labour stability among male employees in the company. Contrast this with 30·1% of females aged 50 years or more whose average length of service is lower than that for males, but is still sufficiently long to suggest a certain amount of stability among this group. Consider also the similarities in the average lengths of service between males and females aged 15 to 29. These suggest that young females are equally committed to the company as young males. Finally, we note that even young workers have respectable lengths of service for their age; an average for those aged 20–24 of 3.6 years and for those aged 25–29 of 6.0 years.

However, it might be argued that the relationship between age-at-joining and length of service is more important than the one between age and length of service, particularly as it can indicate which age groups the company might concentrate on when recruiting so as to maximise the length of service obtained from its employees. Even more important is the relationship between age-at-joining and 'completed length of service'; this is considered in Table 9.16.

Table 9.10 shows that the longest mean (and median) length of service was recorded by the 18 male workers who joined the company before the school leaving age was raised to 15 on April 1st 1947 under the provisions of the 1944 Education Act. Undoubtedly the most striking feature is the long lengths of service associated with comparatively low age-at-joining groups. For example, male workers joining the company in the age range 25-29 have mean lengths of service that are nearly twice as long as those joining in the 45-49 range. It might be hypothesised here that many workers joining the company at a young age do so as craft and technician apprentices. Among male workers, 469 craftsmen and 174 technicians were recruited between the ages of 15 and 24 (see Table 9.11), accounting for almost one quarter (22.8%) of the company's total male workforce. These workers might be expected to stay longer than recruits of similar ages to other occupations because the time spent serving their apprenticeship will see them through the 'induction crisis'. Thus, for males, while the distribution of the mean values among the various age-at-joining categories is unimodal, the fact that it peaks early indicates that the effect on labour stability of young workers joining is not that strong. With the company already recruiting the

Table 9.10 Mean and Median Lengths of Service by Age-At-Joining Group, Males and Females

AAJ (years)	Males Mean	Males Median	Males Number	Females Mean	Females Median	Females Number
< 15	38.2	38.9	18	-	-	-
15-19	15.4	10.4	597	6.5	3.4	124
20-24	17.7	19.0	507	12.6	6.1	55
25-29	19.6	23.9	466	13.1	7.6	29
30-34	18.7	22.8	372	9.8	8.1	27
35-39	15.1	17.3	260	8.1	5.2	35
40-44	11.1	11.4	217	9.0	8.5	52
45-49	8.7	9.3	174	5.5	5.2	36
50-54	5.1	5.3	115	3.4	3.0	26
55-59	3.4	3.3	80	-	-	1
60-64	2.2	2.0	13	-	-	-
All	15.5	13.4	2819	8.3	4.7	385

majority of its male workers in those age categories with the longest mean lengths of service, it is difficult to see how it can increase labour stability any further. Among the much smaller female group, nearly one third were recruited in the 15-19 age range where the mean length of service is 6.5 years, although half this group have less than 3.5 years' service. Another 84 females (21.8%) joined the company in the 20-29 age range and they have mean lengths of service that are more than twice those of workers joining in the 45-50 range. The company might be well advised to concentrate more of its recruitment in this broad 20-29 age range.

It is not enough however to confine our remarks regarding the relationship between age-at-joining and length of service to a general overview of the company because it is bound to vary according to sex and occupation. In Table 9.11 we present the length of service/age-at-joining distributions for a number of groups, 6 male

and 1 female. Taking each group separately the following observations can be made. Male engineers and scientists typically join the company at a young age and stay for a long time. Just over half of this group joined below 25 years of age and these workers have an average of more than 25 years' service. Almost four-fifths of professional engineers joined before they were 30 years old. The average length of service for male technicians in different age-at-joining categories is similar to that of engineers and scientists. It is noticeable however that more male technicians joined the company after the age of 30 and there is a general tendency for their average length of service to be lower. We also see that well over one third of this group joined before the age of 20, the majority of whom would have been taken on as apprentices.

We note that there is not the same concentration of recruitment among young male office workers as there is among male engineers, scientists and technicians. The company seems to favour recruiting male office workers in the 40-49 age range (26.5% are in this age band) even though their mean length of service is considerably lower than for male clerical workers who join in the age range 30-39. Contrast this with female office workers where recruitment seems to be concentrated on very young workers (36.3% of female clerical workers were under 20 for example) despite the fact that the longest average lengths of service were achieved by those who joined in the age range 25-29.

Just under one quarter of male craftsmen joined the company as apprentices in the 15-19 age range, with three-quarters of all

Table 9.11 Age-At-Joining and Length of Service for Various Occupational Groups in Company D (*)

AAJ (years)	(1) Engineers (Male) Length of Service Mean	Median	No.	% of Total	(2) Technicians (Male) Length of Service Mean	Median	No.	% of Total
< 15	-	-	1	0.4	38.8	38.9	4	1.2
15-19	25.2	25.1	58	25.9	17.3	12.4	116	34.0
20-24	28.9	30.3	55	24.6	18.8	19.4	58	17.0
25-29	23.0	26.0	62	27.7	19.3	23.8	55	16.1
30-34	22.2	23.2	20	8.9	17.6	22.8	43	12.6
35-39	16.2	11.6	10	4.5	17.1	20.6	28	8.2
40-44	11.9	12.8	9	4.0	9.8	6.6	14	4.1
45-49	10.5	9.4	4	1.8	7.7	6.3	9	2.6
50-54	7.1	5.6	4	1.8	5.0	4.2	10	2.9
55-59	-	-	1	0.4	2.8	0.5	4	1.2
60-64	-	-	-	-	-	-	-	-
Total	23.7	25.3	224	100.0	17.0	15.4	341	100.0

AAJ (years)	(3) Office Workers (Male) Length of Service Mean	Median	No.	% of Total	(4) Office Workers (Female) Length of Service Mean	Median	No.	% of Total
< 15	-	-	-	-	-	-	-	-
15-19	9.5	4.0	43	12.1	5.2	3.2	107	36.3
20-24	9.5	3.9	55	15.5	11.4	5.1	43	14.6
25-29	13.4	10.0	38	10.7	12.1	7.5	21	7.6
30-34	14.6	14.5	34	9.6	8.8	5.5	20	6.8
35-39	16.9	19.4	35	9.9	8.2	5.2	25	8.5
40-44	10.1	10.6	49	13.8	8.9	8.0	36	12.2
45-49	9.0	10.0	45	12.7	5.5	3.7	25	8.5
50-54	5.7	5.9	31	8.7	3.1	2.5	17	5.8
55-59	3.8	3.7	20	5.6	-	-	-	-
60-64	2.9	3.3	5	1.4	-	-	1	0.3
Total	10.4	6.5	355	100.0	7.4	4.1	295	100.0

(*) Age-At-Joining and Length of Service in years.

Cont./

Table 9.11 cont.

AAJ (years)	(5) Craftsmen (Male) Length of Service Mean	Median	No.	% of Total	(6) Non-Craft Production (Male) Length of Service Mean	Median	No.	% of Total
< 15	38.5	39.5	6	0.5	-	-	1	0.5
15-19	12.1	7.5	264	24.0	8.6	3.5	18	8.1
20-24	17.1	18.9	205	18.6	9.9	4.1	40	18.1
25-29	19.7	24.0	185	16.8	17.0	18.7	40	18.1
30-34	19.9	23.8	169	15.3	17.4	19.0	34	15.4
35-39	14.6	17.7	108	9.8	14.4	13.3	35	15.8
40-44	12.2	13.1	60	5.4	10.9	10.4	25	11.3
45-49	9.4	10.5	52	4.7	7.8	4.4	12	5.4
50-54	6.3	5.5	29	2.6	4.4	4.0	9	4.1
55-59	3.1	2.7	22	2.0	3.7	3.4	7	3.2
60-64	1.2	1.0	2	0.2	-	-	-	-
Total	15.4	13.4	1102	100.0	12.7	9.3	221	100.0

(7) Other Manual (Male)

AAJ (years)	Length of Service Mean	Median	No.	% of Total
< 15	-	-	-	-
15-19	3.6	1.4	28	10.9
20-24	7.9	1.3	33	12.8
25-29	12.3	4.3	16	6.2
30-34	11.4	6.2	23	8.9
35-39	12.8	11.7	24	9.3
40-44	9.8	8.5	42	16.3
45-49	8.2	6.5	34	13.2
50-54	3.4	3.1	30	11.6
55-59	3.0	3.0	22	8.5
60-64	2.0	1.1	6	2.3
Total	7.7	4.4	258	100.0

males in this occupation having joined before the age of 35. Males in non-craft production on the other hand tend to be recruited in the broad age band 20 to 39 years; just over two-thirds can be found in this range. Yet, with the mean length of service being greatest for

workers who joined in the age range 25-34 years, the company might well have been advised to have concentrated on recruiting workers to this occupational group within this ten year age band, rather than the wider 20 year age range which seems to have been in favour.

Turning to other manual male workers, it is evident from the table that the company concentrated much of its recruitment here in two age ranges; 23.7% of such recruits were aged 15-24, while a further 41.1% were taken on in the older age band 40-54. Comparatively few other manual males on the other hand were hired in the 25-39 age bracket (24.4%) despite the average length of service being substantially higher for this age range than any other.

Finally, it is also worth pointing out the sizeable differences that occur between the mean and median length of service distributions in the low age-at-joining categories in four out of the seven groups (the 15-24 category for male office workers and non-craft production males, and the 15-34 band for other manual males and female office workers). In these instances the length of service distributions tend to be more heavily skewed towards the short service categories. The reason for this is that a substantial minority of those young workers joining these occupations tend to attain very long lengths of service. These differences decline however as age-at-joining increases.

9.6 Labour Turnover

So far we have considered the manpower stock of the firm at mid-February 1980 and have drawn a number of tentative conlusions

regarding the degree of labour stability within the firm. Clearly this is an unsatisfactory way of looking at labour stability, and we need to look at changes in the workforce over time if we are to build up a true picture of the manpower situation in the company. To do this we need to compile and analyse data on the different types of leavers and starters, as well as any changes that might take place within the firm, including internal transfers. This we propose to do now when we consider data on starters, leavers and transfers during the year mid-February 1980 to mid-February 1981.

Looking at Table 9.12 we see there were 416 starters and 237 leavers during the year, resulting in a net increase of 179 employees. Figures here have been presented for 13 four week periods rather than 12 calendar months because of the starting point of our study. The rate at which workers joined the company remained fairly steady throughout, varying from 0.7% of the average number employed in the second period to 1.5% in the eighth. There were also remarkably few leavers during the year; just over 7% of the average number employed left the company throughout the year. Breaking down those who left into two broad categories, we note that involuntary turnover (4.4%) was considerably greater than voluntary turnover (2.8%). There also appears to be some evidence that voluntary turnover declined over the year. In the first five periods, such turnover averaged 3.8% p.a. while it fell to an extremely low value of only 2.0% p.a. in the last five periods.

In Table 9.13 we break down leavers by sex and reason for leaving. The classification is derived from records in the personnel

Table 9.12: Monthly Turnover in the Company

Four Week Period	No. at start of period	St.	Lv.	Annual TO	Invol TO		Voln TO	
					No.	% p.a.	No.	% p.a.
1	3204	43	22	8.9	12	4.9	10	4.0
2	3225	21	23	9.3	16	6.4	7	2.9
3	3223	25	21	8.5	11	4.4	10	4.1
4	3227	27	22	8.9	12	4.8	10	4.1
5	3232	28	23	9.3	13	5.2	10	4.1
6	3237	37	14	5.6	12	4.8	2	0.8
7	3260	35	19	7.6	9	3.6	10	4.0
8	3276	49	17	6.7	11	4.3	6	2.4
9	3308	37	10	3.9	6	2.4	4	1.5
10	3335	24	21	8.2	12	4.7	9	3.5
11	3338	28	13	5.1	9	3.5	4	1.6
12	3353	30	14	5.4	10	3.9	4	1.5
13	3369	32	18	6.9	13	5.0	5	1.9
Year End	3383	416	237	7.2	146	4.4	91	2.8

Key: St. = Starters ; Lv. = Leavers ; TO = Turnover

department. Although the actual number of men leaving the company (189) is almost four times greater than the actual number of women leaving (48), the proportion of men who leave is nearly half the proportion of women who leave (6.5% compared to 12.3%; see Table 9.14). Exactly one third (63 workers) of those males who leave do so of their own accord (we see for example that 21 of those leaving did so for financial reasons). This compares with a much higher percentage of women who leave for voluntary reasons (58.3%). We also see that deaths and retirements among males amount to 3.1% of the average number employed and 3.6% of female employment. Thus, our earlier expectations regarding the effect the concentration of older workers would have on retirement rates are confirmed here. The level of voluntary leaving among females at 7.2% is more than three times greater than the rate among male workers (see Table 9.14). However,

Table 9.13: Reasons For Leaving by Sex

Reason	Males No.	Males %	Females No.	Females %	All No.	All %
Leaving district	3	1.6	4	8.3	7	3.0
Domestic/personal	6	3.2	2	4.2	8	3.4
Pregnancy	-	-	15	31.3	15	6.3
Emigration	7	3.7	-	-	7	3.0
Personal/non-job related	16	8.5	21	43.8	37	15.6
Own accord/unspecified*	12	6.3	4	8.3	16	6.8
To increase pay (+)	21	11.1	2	4.2	23	9.7
Working conditions	12	6.3	1	2.1	13	5.5
Travel difficulties	2	1.1	-	-	2	0.8
All voluntary	63	33.3	28	58.3	91	38.4
Retired	71	37.6	13	27.1	84	35.4
Deceased	19	10.1	1	2.1	20	8.4
Dismissed	7	3.7	-	-	7	3.0
End of temp empl.	16	8.5	5	10.4	21	8.9
Health	13	6.9	1	2.1	14	5.9
Total	189	100.0	48	100.0	237	100.0

(*) Includes 'self-employment' and 'previous employment'.
(+) Includes 'promoted elsewhere' and three workers who transfered within the group'.

pregnancy accounted for over half of female voluntary leavers.

Table 9.14 also distinguishes between controllable and unavoidable turnover where the latter is considered to include retirement, illness, death and pregnancy. Thus, we see here that during the period Company D lost 84 workers through retirement, 20 because of death, another 15 due to pregnancies and a further 14 for health reasons. These represented 2.6%, 0.6%, 0.5% and 0.4% respectively of the average number employed during the year. All the other reasons listed in the Table are treated as controllable.

Table 9.14 Involuntary, Voluntary, Unavoidable and Controllable Turnover by Sex

	Av No Empl.	Invol No.	Invol % pa	Vol No.	Vol % pa	Unav No	Unav % pa	Cont No.	Cont % pa	All No.	All % pa
M	2904.5	126	4.3	63	2.2	103	3.5	86	3.0	189	6.5
F	389.0	20	5.1	28	7.2	30	7.1	18	4.6	48	12.3
T	3293.5	146	4.4	91	2.8	133	4.0	104	3.2	237	7.2

Table 9.15 compares the voluntary and involuntary leaving rates by occupation. The only occupations in which the proportion leaving for voluntary reasons exceeds the average for the company as a whole are professional and related (7.2%) and female office workers (8.4%). Voluntary quitting was non-existent for managers and foremen and exceptionally low for professional engineers and scientists as well as office supervisors. Among manual workers, the other manual category has a lower voluntary quit rate than either craftsmen or non-craft production workers. Moreover, we see from the completed length of service distributions in Table 9.16 that a large proportion

Table 9.15: Involuntary and Voluntary Turnover by Occupation

Occn.	Av. No. Empl.	Voluntary Turnover No.	Voluntary Turnover %	Involuntary Turnover No.	Involuntary Turnover %	Total Leavers No.	Total Leavers %
1.	45.0	0	-	1	2.2	1	2.2
2.	55.5	4	7.2	2	3.6	6	10.8
3.	229.0	2	0.9	7	3.1	9	4.0
4.	371.5	10	2.7	7	1.9	17	4.6
5.	366.5	9	2.5	23	6.3	32	8.8
6.	298.0	25	8.4	14	4.7	39	13.1
7.	116.5	1	0.9	7	6.0	8	6.9
8.	124.5	-	-	3	2.4	3	2.4
9.	1145.5	29	2.5	38	3.3	67	5.8
10.	235.0	6	2.6	16	6.8	22	9.4
11.	306.5	5	1.6	28	9.1	33	10.7
Total	3293.5	91	2.8	146	4.4	237	7.2

of those workers who do leave the company for voluntary reasons do so from the lower length of service categories. For example, almost half the male voluntary leavers had less than three years' service, while 50% of the women had less than four years' service. Voluntary leaving was exceptionally low for those with 16 or more years' service. There were only 5 male voluntary leavers out of a total of 1341, a quit rate of 0.4%, and no female voluntary leavers out of the 77 female workers with such service. It is also noticeable that female voluntary quit rates tend to be higher than male ones, the notable exception being for those with less than one year's service. However, female voluntary quitting in Company D is still considerably lower than that observed in Company E.

Running a Chi-Square test for all leavers (those with 16 or

Table 9.16 Completed Length of Service (in years) of Voluntary Leavers

Compl. Service Group	No. in relevant Service Category			Voluntary Leavers					
				Male		Female		Total	
	M	F	T	No.	%	No.	%	No.	%
0- 1	261(*)	50(*)	311(*)	13	5.0	2	4.0	15	4.8
1- 2	223	61	284	12	5.4	4	6.6	16	5.6
2- 3	177	41	218	6	3.4	4	9.8	10	4.6
3- 4	139	39	178	5	3.6	4	10.3	9	5.1
4- 5	128	34	162	3	2.3	3	8.8	6	3.7
5- 6	167	26	193	4	2.4	3	11.5	7	3.6
6-11	421	71	492	10	2.4	5	7.0	15	3.0
11-16	322	42	364	5	1.6	3	7.1	8	2.2
16-21	315	31	346	3	1.0	-	-	3	0.9
21-26	248	17	265	1	0.4	-	-	1	0.4
26-31	433	17	450	1	0.2	-	-	1	0.2
31 +	345	12	357	-	-	-	-	-	-
Total	3179	441	3620	63	2.0	28	6.3	91	2.5

(*) 10 males and 3 females came from within the Group with 0-1 year's service.

more years service were taken as one group) to see if the number leaving was related to completed length of service, our actual value for X^2 of 54.8 exceeded the critical value at the 1% probability level for (9-1) degrees of freedom (21.7). In other words, the number of workers leaving the company is not constant across the various completed length of service categories.

The quit rates for broad length of service groups are presented for males in Table 9.17 and females in Table 9.18. This information enables us to compare Company D with the average results obtained for all manufacturing in 1980 in Tables 5.2 and 5.3. Male quitting from Company D is considerably below the national average rate which seemed to be close to 20% for both starters and core workers. Also, male starters in Company D have a significantly higher quit rate, for both voluntary leavers and all leavers, than do core

Table 9.17: Male Leavers by Completed Length of Service

Service Group	No. in Group	All Leavers No.	All Leavers Rate %	Vol Leavers No.	Vol Leavers Rate %
0-1 yr	261	31	11.9	13	5.0
1 yr +	2918	158	5.4	50	1.7

Table 9.18: Female Leavers by Length of Service

Service Group	No in Group	All Leavers No.	All Leavers Rate %	Vol Leavers No.	Vol Leavers Rate %
0-1 yr	50	5	10.0	2	4.0
1-2 yrs	61	6	9.8	4	6.6
2 yrs +	330	37	11.2	22	6.7

workers. The total rate of quitting among females in Company D is broadly similar between the three length of service categories (close to 10%) and considerably lower than the typical rates of female quitting within manufacturing. It is interesting to note that voluntary quitting among female starters at 4.0% was lower than for those with one to two years' service and core workers.

9.7 The Dynamics of Occupational Change

So far we have seen how the company recruited 416 new workers during the year and was faced with 237 individuals leaving. It is now time to consider a more detailed breakdown of these inflows and outflows, together with the nature and composition of movements within the factory (the so-called internal labour market).

In Table 9.19 we breakdown starters into two separate groups: those joining the company from the external labour market (matrix A) and those joining from associated companies within the Group (matrix B). Almost 30% of those joining the company during the period came from associated companies, the majority being craftsmen and technicians many of whom (perhaps about 60 out of the 79) would just have completed their apprenticeships. In fact, considering all starters together, over one third of the recruits were craftsmen. Other important occupational groups include office workers (both male and female) and other manual workers; 40% of starters were recruited to these categories, the majority coming from the external market.

Regarding the functional mix, the area most affected by the company's recruitment policy has been 'production operations'. Over

Table 9.19 Breakdown of Gains by Occupation and Function, Company D

A: STARTERS: EXTERNAL

	A	B	C	D	E	F	G	Total
1								
2						3	2	5
3			2	2				4
4	1	4	4	13		4		26
5	15		4	2	5	16	1	43
6	3		3	4	5	19	3	37
7								
8								
9	86	7		2	3			98
10	17				2			19
11	24	8		2	30		2	66
Total	146	19	13	25	45	42	8	298

B: STARTERS: FROM GROUP

	A	B	C	D	E	F	G	Total
1		1						1
2						3		3
3	2			1				3
4	4		5	16		4		29
5	3					2		5
6	1			2		5		8
7								
8	1							1
9	41	6		2	1			50
10	10				1			11
11	2	4			1			7
Total	64	11	5	21	3	14		118

C: INTERNAL MOBILITY: CHANGE OCCUPATION BUT NOT FUNCTION

	A	B	C	D	E	F	G	Total
1	2					1		3
2						2		2
3	1		3	3				7
4								
5		3			1			4
6								
7					1	2		3
8	5					1		6
9	9							9
10	7							7
11								
Total	24	3	3	3	2	6		41

D: INTERNAL MOBILITY: CHANGE OCCUPATION AND FUNCTION

	A	B	C	D	E	F	G	Total
1								
2						2		2
3								
4	2		2					4
5	1	1				1		3
6								
7	1					1		2
8	1							1
9	2							2
10	1							1
11								
Total	8	1	2			4		15

E: INTERNAL MOBILITY: CHANGE FUNCTION BUT NOT OCCUPATION

	Suspense	A	B	C	D	E	F	G	Total
1									
2									
3				1					1
4				1			1		2
5		3	1	4			1		9
6	1			1			1	1	4
7						1			1
8		1							1
9			1						1
10									
11	1	1	1			1			4
Total	2	5	3	7		2	3	1	23

half the workers recruited (210 individuals) were employed in this area. Starters were least important in 'organisation and support' where they were the equivalent of 7.4% of the number employed at the beginning of the study. Compare this with an average of almost 14% in 4 of the other areas ('production operations', 'research and development', 'materials control and movement', and 'commercial, management, and administrative services').

In addition to workers joining the company, account must also be taken of occupational mobility within the factory. Here, we restrict our analysis to movement between two or more occupational groups from our eleven-fold classification. This is bound to underestimate the amount of mobility taking place in the company, for we are ignoring the many smaller, though equally significant, job changes taking place within each occupational category. Not only might this approach be accused of simplifying the occupational hierarchy existing in the firm and with it the development of any internal labour markets that might take place, but it might also be criticised for regarding labour mobility in the firm as a series of distinct jumps from one occupation to another (e.g. office workers to office supervisors) while ignoring a number of other moves by the same people along the same promotion path. That said however, we believe an analysis of occupational mobility using our eleven-fold classification will give us some indication of the type and extent of internal labour movement.

We see from the matrices C, D and E in Table 9.19 the number of people joining particular occupations and/or functional

areas from within the factory. Clearly, an important feature of internal mobility was the number of workers moving into craft occupations (11 in all). But perhaps more significant than this was the promotion of 7 workers to foremen, almost entirely from craft occupations, and the five clerical workers promoted to office supervisor. A further 7 workers became either engineers or scientists, the majority of these coming from the technicians category. However, when account is taken of the low level of labour turnover within the company which encourages internal promotion, there are still only 56 significant internal occupational changes, amounting to 1.7% of the number employed at the start of the study. There were a further 23 changes between functions.

Table 9.20 presents a number of different matrices showing the breakdown of people leaving certain occupations and/or functional areas within the company either because they are quitting the company or because they are transferring within the company. Matrix F shows the occupation and function of the 146 involuntary leavers while matrix G includes the 91 voluntary leavers. One third of those leaving did so from clerical occupations, 71 office workers (32 male and 39 female) and 8 supervisors. The majority of male office workers left for involuntary reasons, while the majority of female office workers left for voluntary ones. A total of 67 craftsmen left the company during the year, mostly for involuntary reasons.

Matrix H shows the old occupation of those 41 employees who changed occupations while remaining in the same functional area. Most of these consisted of promotions for employees who were previously

Table 9.20 Breakdown of Losses by Occupation and Function, Company D

F: INVOLUNTARY LEAVERS

	Suspense	A	B	C	D	E	F	G	Total
1							1		1
2							2		2
3				1	5		1		7
4		1	2		2	1	1		7
5	3	5	3	1	1	6	3	1	23
6		2			1	1	9	1	14
7		1				4	2		7
8		1	1			1			3
9	1	29	3		1	4			38
10		15				1			16
11	1	10	9		1	7			28
Total	5	64	18	2	11	25	19	2	146

G: VOLUNTARY LEAVERS

	Suspense	A	B	C	D	E	F	G	Total
1									
2							3	1	4
3		1					1		2
4				1	7	1	1		10
5		3	1				5		9
6	1			1	3	4	15	1	25
7							1		1
8									
9		28	1						29
10		6							6
11		3				2			5
Total	1	41	2	2	10	7	26	2	91

H: INTERNAL MOBILITY: CHANGE OCCUPATION BUT NOT FUNCTION

	A	B	C	D	E	F	G	Total
1								
2						1		1
3								
4			3	3		2		8
5								
6								
7	2					2		4
8	1					1		2
9	6							6
10	6							6
11	9	3			2			14
Total	24	3	3	3	2	6		41

I: INTERNAL MOBILITY: CHANGE OCCUPATION AND FUNCTION

	A	B	C	D	E	F	G	Total
1	1							1
2								
3			1					1
4	1		1	1		2		5
5								
6								
7								
8								
9	2				1			3
10								
11		1			3		1	5
Total	4	1	2	1	4	2	1	15

J: INTERNAL MOBILITY: CHANGE FUNCTION BUT NOT OCCUPATION

	Suspense	A	B	C	D	E	F	G	Total
1									
2									
3		1							1
4		1	1						2
5		3	2	1		1	2		9
6		1		1			2		4
7							1		1
8							1		1
9		1							1
10									
11	2					2			4
Total	2	7	3	2		3	6		23

employed as either other manual workers or technicians. We record in matrix I the 15 workers who changed both their occupation and function during the course of the year. Once again, technicians and other manual workers feature prominently in this group. Finally we see in matrix J the old functions of the 23 workers who just changed functional areas during the period.

Taken together then, these matrices provide us with enough information to build up a comprehensive picture of the manpower situation within the company. Much of the movement in the factory consisted of workers joining the company (either from the external labour market or from associated companies within the Group) and workers leaving the company. There were 56 significant occupational changes within the factory, 1.7% of the number employed in February 1980, and a similar number who actually transferred from other companies in the Group. Finally, 23 workers moved to different functional areas while keeping the same occupation.

Of the 148 craftsmen recruited during the year, the majority were assigned to 'production operations'. Internal mobility accounted for another 11 workers joining this occupation during the period. A total of 67 craftsmen left the company (mainly from 'production operations') with a further 9 being lost to other occupations within the factory. Thus, there was a net increase of 83 (or 7.5%) - see Table 9.21 - in the number of craftsmen employed by the company during the year. Among other manual workers we see that 73 employees joined in this capacity, the majority from the external market, and 33 left during the year mostly for involuntary

reasons (usually temporary employees). Moreover, there were 19 significant occupational changes (promotions) among this group, amounting to 6.4% of the number employed at the beginning of the study. All these changes resulted in a net increase of 21 in the number of other manual workers employed by the company, representing an increase of 7.1% over the year (once again, see Table 9.21). There was also an important increase in the number of technicians employed by the firm. There were 55 starters (just less than half coming from the external labour market) and 4 internal promotions to technician, and while 17 technicians left the company altogether, 13 others changed their occupations within it. Thus, there was a net increase of 29 technicians (8.1%) during the year. It is clear from this therefore that these three occupations provide the firm with an important link with the external labour market, and workers recruited to them can be seen to make changes to other occupations within the factory as well.

Also worth noting is the decline in the number of supervisors. While 8 left the firm and 4 transferred to alternative occupations, only 5 were recruited internally to replace them. The fact that no supervisor was recruited externally suggests that this position tends to be restricted to internal applicants. Regarding the manual equivalent of the supervisor category, namely that of foreman, it is interesting to see that while 3 foremen left the company and 2 moved internally, replacements came from within the Group. While 1 worker joined Company D from an associated company as a foreman, 7 others were promoted internally. Once again, we see the importance the company places on internal recruitment when it comes to filling

Table 9.21 Net Change Matrix. Occupation and Function

		Function								% of initial
Occn.	Susp.	A	B	C	D	E	F	G	Tot.	stock
1		1	1				0		2	4.5
2							4	1	5	9.4
3		1		4	1		-2		4	1.8
4		4	1	7	16	-2	3		29	8.1
5	-3	11	-1	6	1	-1	10	0	23	6.5
6	0	1		2	2	0	-1	2	6	2.0
7		-2				-2	-3		-7	-5.8
8		6	-1			-1	-1		3	2.4
9	-1	72	10		3	-1			83	7.5
10		8				2			10	4.3
11	-2	5	0		1	16		1	21	7.1
Total	-6	107	10	19	24	11	10	4	179	5.6
% of initial stock	-66.7	7.0	3.4	7.8	7.3	3.3	2.4	5.8	5.6	

key supervisory positions within the firm.

Aggregating the gain matrices and the loss matrices and subtracting the latter from the former gives the net change in the occupation by function matrix; see Table 9.21. As well as the occupational changes we have already looked at, we see that there was a net increase of almost 10% in the number of professional and related workers employed by the company during the year. Moreover, while there was a net increase of 6.5% in the number of male office workers employed by the company, female clerical workers only increased their numbers by 2.0% throughout the year.

Three functional areas underwent a net expansion of 7.0% or more, namely 'production operations', 'organisation and support' and 'research and development'. By contrast, there was only a net

expansion of 2.4% in the number employed in 'commercial, management and administrative services'.

We are now in a position to consider the level of labour market activity within the company. We are only interested in those movements initiated by the individual and define labour market activity as being all workers who leave voluntarily and those who decide to change their occupation and/or functional area within the factory. As before then, we take the gross loss matrix (not shown) and subtract from it any losses due to involuntary leaving (matrix F, Table 9.20). The cell totals are then expressed as a percentage of the total number employed in that occupation and function in February 1980; see Table 9.22.

The greatest degree of labour market activity occured among female office workers. Such workers were particularly prone to labour market activity in 'research and development' and 'commercial, management and administrative services', and comparatively stable in 'production' and 'other common and miscellaneous services'. Labour market activity was also high among other manual workers and, perhaps surprisingly, among the professional and related group of workers. Voluntary leaving or job changing within the factory was affecting some 9% of all workers in these three broad occupational categories, this being almost twice the average for the company. Contrast this with the situation appertaining to engineers and scientists, where the rate of labour market activity was so low at 1.8% that it would take nearly 28 years for half the jobs in this category to change hands. In fact, there was no labour market activity whatsoever among

Table 9.22 Labour Market Activity = Gross Loss Minus Involuntary Leavers as a % of the Number Employed at the Beginning of the Year (*)

	Function							
Occn.	A	B	C	D	E	F	G	Total
1						0.0		2.3
2						9.3		9.4
3	7.7		2.1	0.0				1.8
4	6.7	5.6	3.9	9.2		8.9		7.0
5	5.5	7.0	4.3		1.7	6.6		5.1
6	4.5		6.9	14.3	9.1	12.6	3.1	9.8
7	7.1				0.0	10.0		5.0
8	1.1	0.0						2.4
9	4.2	0.8		0.0	1.8			3.5
10	5.3							5.2
11	13.5	6.5			7.5		5.0	9.5
Total	5.0	3.1	3.7	4.3	4.8	9.7	4.3	5.3

(*) Cells are only represented when the number employed in a given occupation and function is 10 or more. These 35 cells accounted for 3070 of the 3204 (95.8%) employees at the beginning of the year.

the 135 engineers and scientists employed in 'research and development'. Managers and foremen also display considerable stability, a finding which is important given the key role such workers play in the company. Regarding craftsmen, the dominant occupational group, we see that the rate at which they voluntarily left the firm or changed jobs within it was well below the average for the company as a whole. Here, labour market activity was almost entirely confined to 'production operations' which recorded 28 voluntary leavers and 9 internal changes among its craftsmen.

Considering labour market activity in the different functional areas shows that this was greatest in 'commercial,

management and administrative services'. Labour market activity failed to exceed 5.0% in any of the other areas and was lowest in 'installation, maintenance and repair'.

In conclusion therefore, there is no evidence of secondary employment in Company D. Voluntary quitting among all occupational groups was generally low. It should be borne in mind however that this study was undertaken during a period of rapidly rising unemployment within the general economy; people employed in Company D had comparatively well paid and secure jobs and, ceteris paribus, voluntary quitting was bound to be low. The company can also be seen to encourage internal labour mobility among workers typically depicted as belonging to the secondary sector. Thus, we see that people in manual/unskilled jobs, e.g. other manual workers, are given access to the internal labour market. If we are to accept that these workers are secondary workers then we can say that Company D is operating a labour market similar to the multi-segmented one described by Mok (1975; see Chapter 2.4). It would appear therefore that the other manual occupation acts as quite an important filter for better jobs within the company, allowing a minority of workers to achieve promotion once they prove themeselves.

We also see that Company D itself benefits from inter-company/factory movements. The net expansion of employment in the company was partially achieved by the transfer of workers from associated companies. Only three workers left the company to transfer to other companies in the Group. Thus, the advantage of having several factories within the same broad geographical area means that

it is easier to adjust the labour force in any particular factory to changing economic conditions. However, it should be remembered that half of the 118 starters joining from the Group are apprentices finishing their training, so these are not real transfers. Yet, that said, there is no doubt that the inter-factory labour market is as important a source of labour recruitment for Company D as the internal factory labour market.

Chapter 10 Company A

10.1 Introduction

Company A is a subsidiary of a large holding company and is involved in electrical engineering. Some of its associated companies operate in the same labour market and, although there is some movement of workers between these firms, the flow is not as significant as that for Company D. As before, length of service is defined in terms of the starting date with the group of companies. This study started on January 1st 1976. At this date the company had 889 employees, of whom about a third were female and more than 70% were manual. The total company manpower was allocated between 62 different departments which, for the purposes of analysis, were reduced to seven main functional areas.

This chapter follows the pattern of the previous two and presents an extensive analysis of the manpower stock, sections 10.2 to 10.5, followed by a consideration of labour turnover (10.6) and the dynamics of occupational change (10.7) during a twelve month period. However, the company was studied over a five year period and some results from this extended analysis are presented in Chapter 11. During the five years there were three sets of redundancies. The first in January 1976 involved 33 workers and was relatively small. The second happened towards the end of 1979 when the number made redundant exceeded 140. The third set of redundancies took place in December 1980 when another 52 workers were laid-off.

This company had, from the point of view of our research, the most efficient system for generating data on both the manpower

stock and changes to this stock position. The centre piece of this system was the 'employment register'. This was an appropriate name for a continuously up-dated listing of all the employees within each department. As well as the full name, the register gave other important information such as sex, date of birth, starting date with the company, occupation and/or grade, and a company specific occupation coding. A weekly sheet of manpower changes showed starters, leavers and all internal transfers and promotions. All such changes were accompanied by appropriate amendments to the employment register. A new set of sheets for the employment register was prepared for the beginning of each calendar year. All this was to prove immensely valuable when we studied the extent of labour market activity in the firm and the relative importance of external and internal labour markets.

Regarding the occupational mix of the company, more than 30% were involved in other non-craft production and another 20% were employed as semi-skilled machinists. There was, however, a classification problem regarding this second group because many machinists were accepted as totally skilled by the company when in fact they had not served traditional apprenticeships. Such workers were classified as semi-skilled as other companies would not have recognised them as skilled craftsmen. It is also important to note that the tasks undertaken by the other non-craft production workers were of a routine nature and involved a minimum of training. Their work was thus similar to that undertaken by the other non-craft production/twilight workers in Company E. Earnings by all employees in Company A were considered to be above average for the local labour

market.

10.2 Sex and Occupational Status

Company A contains 889 employees, 603 males (67.8%) and 286 females (32.2%). In Table 10.1 we present an eleven-fold occupational breakdown similar to those used in Companies D and E. Nearly three-quarters of all employees can be found in manual occupations, with 61.4% of workers being either semi-skilled or unskilled. Office workers account for 13.9% of total employment, and it is interesting to note that while there are more than twice as many female office workers as males, there are three times as many male office supervisors as female (15 males compared with 5 females). What is

Table 10.1 Distribution of Employment by Occupation

Occupation	Males	Females	Total	% of 889
1. Managers	29	0	29	3.3
2. Professional and Related	24	2	26	2.9
3. Professional Engineers, Scientists	10	0	10	1.1
4. Technicians, Draughtsmen	31	0	31	3.5
5. Office Workers	35	88	123	13.9
6. Office Supervisors	15	5	20	2.2
All Non-Manual	144	95	239	26.9
7. Foremen and Supervisors	34	4	38	4.3
8. Craftsmen	66	0	66	7.4
9. Semi-Skilled Machinists	162	12	174	19.6
10. Other Non-Craft Production (*)	121	154	275	30.9
11. Other Manual	76	21	97	10.9
All Occupations	603	286	889	100.0

(*) In subsequent tables, other non-craft production males are given the number 10 and females the number 12.

more, very few women are employed in skilled occupations or in positions of responsibility. For example, there are no female managers, engineers, scientists, technicians or craftsmen, and only 2 women in the professional and related occupation. Only 4 skilled females could be found in manual occupations (as foremen/ supervisors). The major occupational category is other non-craft production workers (30.9% of the total), and over half of these are female.

10.3 Functional Area

Table 10.2 shows how the labour force in Company A is distributed across our seven functional areas. Almost three quarters of the workforce are employed in the broad area of 'production', with two-thirds being directly involved in 'production operations'. Another 15.2% can be found in 'commercial, management and administrative services'. 'Research and development' is a more or less nominal activity with only 3 workers employed here.

Table 10.2 Distribution of Employment by Functional Area

Functional Area	Number	%
A. Production: Operations	580	65.2
B. Production: Installation, Maintenance and Repair	52	5.8
C. Production: Organisation and Support	27	3.0
D. Materials, Control and Movement	61	6.9
E. Research and Development	3	0.3
F. Commercial, Management and Administrative Services	135	15.2
G. Other (Common and Miscellaneous Services)	31	3.5
Total: All Functions	889	100.0

In Table 10.3 we see how the labour force is broken down by occupation and function. The dominant area of 'production operations' consists mainly of semi- and unskilled workers, with 4 out of every 5 workers falling into these two categories. Just over two thirds of all craftsmen and 60% of the foremen are also employed in 'production operations'. Non-manual occupations account for less than 10% of employment in 'production operations', although we find 40% of the company's managers and 30% of its office supervisors here. 'Installation, maintenance and repair' is the most skill intensive activity with more than half the workforce being foremen or skilled

Table 10.3 Occupation by Function Matrix

	Function						
Occn	A	B	C	D	E	F	G
1.	12	2	2	2	1	10	0
2.	0	0	3	1	1	19	2
3.	0	0	8	0	0	2	0
4.	0	0	8	0	1	22	0
5.	36	0	6	15	0	62	4
6.	6	0	0	2	0	12	0
All N-M	54	2	27	20	3	127	6
7.	23	7	0	6	0	1	1
8.	46	20	0	0	0	0	0
9.	171	3	0	0	0	0	0
10.	113	2	0	0	0	6	0
11.	19	18	0	35	0	1	24
12.	154	0	0	0	0	0	0
All Occs	580	52	27	61	3	135	31

craftsmen. All the workers employed in 'organisation and support' are non-manual, though no group really dominates. Although there is a fairly large proportion of non-manual workers in 'materials, control and movement' manual workers still dominate, particularly the other

manual category. The second largest functional area in the company, 'commercial, management and administrative services', is predominantly made up of non-manual workers, with office workers and supervisors accounting for more than half the number in this area. Finally, there is a minority of workers in 'other common and miscellaneous services' (31 workers), the majority of whom can be found in other manual occupations.

10.4 Age Structure

Table 10.4 shows the age distribution in 5 year intervals for males, females and the total labour force. The male distribution is extremely uniform, with some 10% of the total in each of the nine age bands between 20 and 64. The female distribution takes on a slightly different shape, with a concentration of workers in the 30-39 age range. The female age distribution is unusual in that we do not have the bimodal distribution observed in our other two companies. Table 10.4 also presents the age distribution for economically active males and females in the local labour market. Company A clearly has an atypical female labour force, with relatively few young workers. For example, only 7.0% of the company's female workforce are in the 15-19 age group compared with 13.5% in the local labour market. Furthermore, the proportion of females aged 30-34 that are employed by the company is more than twice that found in the local labour market. Contrast this with the situation regarding male workers in the company, where the distribution among the different age categories almost exactly matches that for the local labour market.

Table 10.4 Age Distribution of Male(*) and Female Workers

	Company A			Economically Active Population (+)	
Age Group	Males (%)	Females (%)	Total (%)	Males (%)	Females (%)
15-19	6.7	7.0	6.8	8.4	13.5
20-24	10.9	8.4	10.1	9.5	11.1
25-29	9.3	9.4	9.4	10.9	8.3
30-34	9.7	16.4	11.9	9.8	7.4
35-39	10.0	14.0	11.3	9.8	9.4
40-44	9.5	12.6	10.5	10.4	10.6
45-49	11.4	10.5	11.1	10.7	11.9
50-54	11.9	12.6	12.1	9.6	10.6
55-59	10.7	9.1	10.2	9.7	9.3
60-64	9.8	-	6.7	8.0	5.2
65+	0.2	-	0.1	3.2	2.7
All ages	100.0	100.0	100.0	100.0	100.0

(*) The age of four male employees (all managers) was not known. So the data here, and in subsequent tables apertaining to age and length of service, refers to a total labour force of 885.

(+) This column refers to the local labour market, in this case the South-West: Northern Sub-division - Bristol-Severnside.
Source: Census 1971, England and Wales, Economic Activity, Sub-Regional Tables (10% sample), Table 5.

Table 10.5 gives the age distributions for the different occupations in the company. Taking non-manual occupations first we see that the company has avoided the potential problems caused by having a high proportion of workers in the upper age ranges, particularly those aged 55 or more. The majority of managers for example are aged 45 to 54 and there are a number of younger managers in the firm as well. Just over 15% of professional and related workers are aged between 60 and 64, suggesting a retirement rate averaging 3% p.a. over the period 1976-80. However, it should be

Table 10.5 Age Distribution for Different Occupations (%) (*)

Age (years)	Occupation 1	2	3	4	5	6	7	8	9	10	11	12
15-19	-	-	-	6.5	14.6	-	-	24.2	4.0	9.1	2.1	2.6
20-24	4.0	7.7	10.0	6.5	16.3	10.0	-	10.6	11.5	19.0	4.1	4.5
25-29	8.0	3.8	20.0	9.7	7.3	-	5.3	7.6	10.3	12.4	8.2	11.7
30-34	12.0	15.4	-	16.1	5.7	15.0	7.9	7.6	12.6	7.4	10.3	22.1
35-39	8.0	7.7	20.0	6.5	12.2	5.0	10.5	9.1	10.9	9.1	12.4	15.6
40-44	4.0	7.7	20.0	19.3	9.8	15.0	15.8	9.1	9.8	4.1	11.3	14.3
45-49	32.0	11.5	-	22.5	9.8	10.0	13.1	12.1	10.9	9.1	8.2	9.7
50-54	24.0	19.2	10.0	-	12.2	20.0	21.1	7.6	13.2	10.7	9.3	11.7
55-59	4.0	11.5	20.0	9.7	6.5	20.0	21.1	4.5	8.6	9.1	20.6	7.8
60-64	4.0	15.4	-	3.2	5.7	5.0	5.3	7.6	7.5	9.9	13.4	-
65+	-	-	-	-	-	-	-	-	0.6	-	-	-
Total	100	100	100	100	100	100	100	100	100	100	100	100
Mean	48.9	45.5	40.2	39.3	37.0	44.8	47.5	35.1	40.6	38.3	45.3	39.1
Median	49.5	47.5	38.8	40.6	36.9	46.3	49.3	34.8	40.1	36.3	47.3	37.7

(*) As percent of number in each occupation. Columns add to 100%.

remembered that professional and related is a very small group of only 26 employees. Moreover, the company has miminised any disruptive influence retirement might cause within this group by having a number of younger professional and related workers. We see a similar situation arising with office supervisors where a quarter of the workers are aged 55 or more. Once again, the company has made provision for replacing those who retire by having a number of younger supervisors and a number of clerical workers of all ages who can be promoted if need be. Almost one third of office workers are in fact under 25 years of age, while 56.1% are no more than 40. Similarly, a high proportion of technicians can be found in the younger age categories with nearly 40% below 35.

Turning to the manual occupations we see almost half the company's foremen (18 out of 38) are aged over 50, though only 2 are in the 60-64 age category. No foreman is under 25 years of age and only 5.3% (2 out of 38) are aged 25-29. One quarter of all craftsmen are under 20 years old and will, in general, be serving their apprenticeship. This is a remarkably high percentage, with the company training more craftsmen than will be retiring (possibly as part of an overall policy of expansion in the craftsmen occupation). Only 12.1% of craftsmen are more than 55 years old and the remainder are spread fairly evenly over the other age ranges. The age distribution of semi-skilled machinists is very similar to that for the company as a whole, with an average of 11% of workers in this category falling into each 5 year interval between the ages of 20 and 59. It is interesting to note the contrast in the distributions of male and female other non-craft production workers. While the male distribution shows that 2 out of every 5 males in this group are aged 15-29, only 1 in every 5 females are of similar age. More than one fifth of female non-craft production workers are aged 30 to 34, with another 29.9% aged between 35 and 44. Such a distribution is surprising because it is generally accepted that there is a dip in female participation rates in this middle age range. Company A seems to have a preference for women in this age range when recruiting workers for this routine production work. Finally, other manual workers is the only occupation where the age distribution is heavily skewed towards the upper age bands; over one third of these workers are more than 55 years old, while less than 15% are to be found in the 15 to 29 age range.

In Table 10.5 we also present the mean and median ages for workers in different occupations and it is immediately clear that the difference between the two is small in each instance, never exceeding two years. Managers and foremen are the two occupations with the highest average age while craftsmen have the lowest value. This latter statistic is clearly influenced by the large proportion of craft apprentices with the company.

10.5 Labour Stability

Table 10.6 presents the length of service distributions of male and female employees, and it does appear to show that females are more unstable than males. For example, three times as many males have in excess of 20 years' service with the company than females (16.5% compared with 5.6%), while there are 2.5 times as many males with more than 10 years' service than females (37.5% compared with 14.6%). Moreover, more than half the female workforce (56.1%) have less than 5 years' service, compared with a third of males (36.7%). Sex differences in length of service are further confirmed when we compare their average lengths of service.

Earlier, in Chapter 8, doubts were raised as to the relevancy of comparing such distributions without first holding constant a number of personal and job characteristics. For it was argued that once these factors are held constant, the difference between the labour force stability of the two sexes may well be reduced. In the same way as before, we shall try to examine this hypothesis by comparing length of service distributions between male and female workers in different occupations, concentrating on other

Table 10.6 Length of Service Distributions

Service group (years)	Males	Females	Total
0 -0.5	3.0	4.2	3.4
0.5-1.0	5.7	3.8	5.1
1.0-1.5	7.0	8.0	7.3
1.5-2.0	2.8	7.3	4.3
2.0-2.5	4.2	7.3	5.2
2.5-3.0	3.0	8.4	4.7
3.0-3.5	3.0	7.7	4.5
3.5-4.0	2.8	4.5	3.4
4.0-4.5	4.0	3.5	3.8
4.5-5.0	1.2	1.4	1.2
0 - 5.0	36.7	56.1	42.9
5 - 6	6.7	4.5	6.0
6 - 7	7.3	7.3	7.3
7 - 8	3.8	7.3	5.0
8 - 9	4.8	5.9	5.2
9 -10	3.0	3.8	3.3
5 -10	25.6	28.8	26.8
10 -15	13.2	7.3	11.3
15 -20	7.8	1.7	5.9
20 -25	5.2	2.8	4.4
25 -30	5.5	2.1	4.4
30 +	5.8	0.7	4.2
All lengths	100.0	100.0	100.0
Mean (years)	10.4	6.0	8.9
Median (years)	6.9	3.7	6.2

non-craft production workers in particular as this is the only occupation in which there are a large number of both male and female workers. As before, if our findings point to workers in this occupation being more unstable than the average for the company, then the low average length of service of women can be attributed to the fact that they tend to be concentrated in a relatively unstable occupation, not their sex.

Table 10.7 presents the mean length of service for individual occupations broken down by sex, and it is immediately clear that the shortest service for males occurs in other non-craft production where the mean is 8.0 years. What is more, more than half the workers in this occupation are female (56%) and their mean length of service was lower than the male one at 6.3 years. Comparing their respective median lengths of service (not shown here), the female median is also lower than that for males (4.2 years compared with 5.8 years).

We also note from Table 10.7 that craftsmen have the second lowest mean length of service among male workers, slightly lower than both semi-skilled machinists and other manual workers. Foremen of both sexes display very long mean lengths of service. Turning to the non-manual occupations, office workers have the lowest mean (and median) length of service in both the male and female case, while office supervisors have the longest mean lengths of service. It is interesting to note the difference in the mean lengths of service between male and female office supervisors. While three-quarters of office supervisors are male with a mean length of service of 24.6 years and a median of 27.3 years, the mean and median lengths of

Table 10.7 Mean Length of Service (in years) by Occupation and Sex

	Non-manual						Manual					All
	1	2	3	4	5	6	7	8	9	10	11	
M	16.6	14.0	11.8	11.4	10.7	24.6	20.7	8.2	8.4	8.0	8.8	10.4
F	-	7.1	-	-	3.6	17.2	19.3	-	8.3	6.3	6.9	6.0
R	-	1.97	-	-	2.97	1.43	1.07	-	1.01	1.27	1.28	1.73

M = males, F = females, R = ratio of males to females

service for female office supervisors are much lower at 17.2 years and 9.8 years respectively. What this suggests is that if the position of office supervisor is only obtained by internal promotion (Table 10.8 shows that no supervisor has less than 4 years' service) then this seems to occur much more quickly for females than for males. As in the case of Company D, it would seem as though female clerical workers with ability get promoted more rapidly than male clerical workers, although long service for males in this occupation seems to lead to promotion more often than it does for females.

So it would appear then that, for any given occupation, male workers in the company are more stable than females, the difference being particularly marked among clerical workers. The time has now come to turn our attention to the relative stability of the different occupational groups.

Table 10.8 shows the length of service distributions for the various occupations in Company A. Taking the manual category first, the group to exhibit the greatest stability is foremen. Only 5.2% of this group (2 out of 38) have less than 5 years' service, suggesting that the position of foreman is one primarily attained via internal promotion. Nearly a half of all foremen have 20 years' service or more, with a quarter having in excess of 30 years'. No other manual occupation can match such long lengths of service. For example, only 7.5% of craftsmen have 20 years' service or more, while approximately half have less than five years' service. However, one quarter are apprentices (see Table 10.5) who clearly must have less than 5 years' service. This implies that the company has been

Table 10.8 Length of Service Distributions for each Occupation

% of Total Number in each Occupation

Length of Service (years)	Non-manual						Manual					
	1	2	3	4	5	6	7	8	9	10	11	12
0 - 0.5	8.0	-	-	3.2	10.6	-	-	10.6	3.4	0.8	-	-
0.5 - 1	-	7.7	10.0	3.2	9.8	-	2.6	3.0	6.3	8.3	4.1	0.6
1 - 2	8.0	7.7	-	6.5	18.7	-	2.6	9.1	10.9	11.6	11.3	14.9
2 - 3	4.0	-	10.0	3.2	17.1	-	-	10.6	7.5	10.7	7.2	15.6
3 - 4	4.0	-	-	3.2	1.6	-	-	6.1	10.3	7.4	9.3	16.9
4 - 5	8.0	7.7	-	9.7	3.3	5.0	-	7.6	4.0	4.1	6.2	6.5
0 - 5	32.0	23.1	20.0	29.0	61.1	5.0	5.2	47.0	42.4	42.9	38.1	54.5
5 - 10	8.0	15.4	30.0	29.0	21.9	25.0	15.8	22.7	25.9	30.6	38.1	30.5
10 - 15	16.0	26.9	20.0	12.9	8.1	-	18.4	10.6	15.5	12.4	7.2	6.5
15 - 20	-	11.5	10.0	6.5	0.8	10.0	13.2	12.1	8.0	4.1	7.2	2.6
20 - 25	8.0	3.8	10.0	12.9	5.7	5.0	10.5	-	2.3	5.0	4.1	3.2
25 - 30	12.0	11.5	10.0	6.5	1.6	30.0	13.2	4.5	2.9	2.5	2.1	2.6
30 +	24.0	7.7	-	3.2	0.8	25.0	23.7	3.0	2.9	2.5	3.1	-
Total	100	100	100	100	100	100	100	100	100	100	100	100
Mean	16.6	13.5	11.8	11.4	5.6	22.8	20.6	8.2	8.4	8.0	8.4	8.9
Median	11.3	11.2	10.0	8.3	2.5	27.3	17.9	5.3	6.2	5.8	6.2	4.2

Means and medians give in years.

recruiting qualified craftsmen during the last five years in addition to those it is training. The remaining manual occupations have length of service distributions that are broadly similar to craftsmen with relatively large proportions of workers in the low service categories and relatively small proportions in the higher service categories. One interesting aspect concerns the recruitment of non-craft production workers in the last year which seems to have concentrated almost entirely on male workers.

The most stable group of workers in the company are office supervisors. More than half this group have lengths of service of at least 25 years, with 25% enjoying service of 30 years or more. As we

have already seen, only one office supervisor has less than 5 years' service suggesting that the position of office supervisor is one reached solely by promotion within the firm. The other non-manual category to have very long lengths of service is the managerial one; 36% of this group have 25 years' service or more and a total of 68% have been with the firm at least 10 years. Also noticeable however is the fact that 2 managers have less than 6 months' service indicating that while some workers are promoted to manager within the company, others are recruited from the external labour market.

Regarding the other non-manual occupations, between one fifth and one third of professional and related workers, engineers and scientists, and technicians have been with the company no more than 5 years. Compare this with the 61.1% of office workers who have similar lengths of service.

Finally, before turning to look at labour turnover rates and internal labour mobility, we need to examine the relationship between age and length of service, and perhaps more significantly that between age-at-joining and length of service. In Table 10.9 we see the expected positive relationship between age and length of service: for example, 6.7% of the company's male workforce are aged 15-19 and have a mean length of service of 1.3 years (median 0.9 years); compare this with the length of service averages enjoyed by the 9.8% of workers aged 60 to 64, where the mean is 17.2 years and the median 15.1 years. We see a similar situation arising with female workers although the means and medians in each age category fall below those of males, sometimes by as much as half. Male workers aged

Table 10.9 Mean and Median Lengths of Service by Age Group, Males and Females

Age (years)	Males Mean	Males Median	Males Number	Females Mean	Females Median	Females Number
15-19	1.3	0.9	40	1.2	1.0	20
20-24	3.6	3.3	65	2.7	1.6	24
25-29	5.8	5.9	56	3.8	2.8	27
30-34	7.4	6.4	58	4.3	3.2	47
35-39	8.7	7.6	60	4.5	3.5	40
40-44	11.9	9.9	57	7.5	5.5	36
45-49	12.5	9.5	68	8.8	6.7	30
50-54	14.7	11.1	71	9.8	7.3	36
55-59	16.3	12.2	64	9.7	8.2	26
60-64	17.2	15.1	59	-	-	-
All	10.4	6.9	599	6.0	3.7	286

over 40 have average levels of service of at least 12 years, while female workers of this age have been with the company for an average of almost ten years. Care should be taken however when interpreting these figures because there is bound to be an element of correlation between the two distributions as only workers of a certain age can have certain lengths of service.

We have already argued in Chapters 8 and 9 that the relationship between age-at-joining and length of service is probably of greater relevance than that between age and length of service, pointing out the benefits a company might derive from seeing which age groups give the longest service. Turning to Table 10.10 then, we see that the longest mean length of service among male workers occurs in the 25-29 age-at-joining range, while the shortest are found with those joining when aged 55 or more. This of course ignores the 1.5% of the labour force which joined the company before the age of 15. The company seems to have recognised that, with the exception of male

Table 10.10 Mean and Median Lengths of Service by Age-At-Joining Groups, Males and Females

Age (years)	Males Mean	Males Median	Males Number	Females Mean	Females Median	Females Number
Under 15	35.2	35.3	11	30.3	28.4	2
15-19	9.9	5.5	135	4.4	2.1	39
20-24	11.4	8.3	97	5.9	2.4	30
25-29	13.9	11.3	85	6.9	4.6	53
30-34	10.4	7.3	61	6.3	3.7	48
35-39	7.8	6.8	59	6.1	5.9	45
40-44	10.9	8.9	42	5.2	5.1	27
45-49	6.9	6.3	58	5.7	4.2	26
50-54	6.1	5.9	29	4.2	3.1	15
55-59	3.1	2.2	15	-	-	1
60-64	1.7	1.7	7	-	-	-
All	10.4	6.9	599	6.0	3.7	286

workers recruited between the ages 40 and 44, males recruited in the broad age category 15-34 provide the longest mean and median lengths of service because they recruit a large number of males in this range. There are two interesting points to note about the female distribution. First, females, irrespective of their age when joining, tend to have lower mean and median lengths of service than males. The only noticeable exception here is in the 35-39 age range where the male and female averages are approximately the same. Secondly, there is not much variation in the mean length of service for females in the different age-at-joining groups. The mean length of service for females joining in the broad age range 25-39 is marginally higher than for other groups and the company does in fact recruit just over half its female employees at this age.

It is not enough however to confine our remarks regarding the relationship between age-at-joining and length of service to a

general overview of the company because it is bound to vary according to sex and occupation. In Table 10.11 therefore we present the length of service/age-at-joining distributions for a number of groups (two male and two female) where the total number is close to, or greater than, 100. Nearly one-fifth of semi-skilled male machinists were under 20 years of age when they were recruited and just over 50% were under 30 years old. Semi-skilled male machinists in the broad age-at-joining range 20-29 also tend to have the longest mean lengths of service (only the 14 workers recruited in the range 40-44 years have longer) which might explain the company's policy of recruiting a large proportion of workers in this range.

We note a similar concentration of recruitment among young male other non-craft production workers. Two-thirds of this group joined the company before they were 35, with the 30 workers joining in the range 25-34 enjoying the longest lengths of service. Contrast this with the recruitment of female other non-craft production workers. While nearly half (42.9%) the men in this occupation joined before they were 25, only 16.8% of females joined the company in this age range. Recruitment of female other non-craft production workers was concentrated in the age range 25-34. Young female recruits (aged 15-24) to this occupation do achieve long lengths of service and seem to be more stable than male recruits of the same age. However, the more general picture is that the length of service for female non-craft production workers is lower than that attained by their male counterparts.

Finally, turning to female office workers we see that the

Table 10.11 Age-At-Joining and Length of Service For Various Occupational Groups

AAJ (years)	Non-Craft Production, Male: Service Mean	Service Medn	No.	% of total	Office Workers, Female: Service Mean	Service Medn	No.	% of total
15-19	6.8	3.5	32	26.4	1.7	1.1	21	23.9
20-24	4.6	2.4	20	16.5	3.1	1.4	17	19.3
25-29	12.6	11.3	15	12.4	2.7	1.6	7	8.0
30-34	11.0	7.6	15	12.4	4.5	3.7	9	10.2
35-39	8.4	5.3	10	8.3	5.0	2.9	13	14.8
40-44	9.4	6.2	10	8.3	6.1	6.8	8	9.1
45-49	6.9	6.2	8	6.6	5.3	5.5	9	10.2
50-54	7.3	7.0	8	6.6	3.6	2.8	3	3.4
55-59	-	-	2	1.7	-	-	1	1.1
60-64	-	-	1	0.8	-	-	-	-
Total	8.0	5.8	121	100.0	3.6	2.2	88	100.0

AAJ (years)	Semi-Skilled Machinists, Male: Service Mean	Service Medn	No.	% of total	Non-Craft Production, Female: Service Mean	Service Medn	No.	% of total
15-19	7.1	5.4	32	19.8	7.5	6.9	17	11.0
20-24	11.0	7.7	29	17.9	8.7	3.2	9	5.8
25-29	10.4	5.4	22	13.6	7.2	5.7	37	24.0
30-34	8.1	3.8	14	8.6	5.6	3.3	32	20.8
35-39	6.5	4.3	19	11.7	6.3	4.3	26	16.9
40-44	11.3	9.8	14	8.6	4.5	3.5	13	8.4
45-49	6.3	5.8	21	13.0	4.8	3.9	11	7.1
50-54	5.3	3.6	8	4.9	4.4	3.1	9	5.8
55-59	-	-	1	0.6	-	-	-	-
60-64	-	-	2	1.2	-	-	-	-
Total	8.4	6.0	162	100.0	6.3	4.2	154	100.0

longest lengths of service was attained by workers who joined in the age range 35-49, this accounting for just over one third of the workers in the group. Most female clerical workers however were recruited at a young age (43.2% were less than 25), and such workers have low lengths of service.

10.6 Labour Turnover

Table 10.12 gives the number of starters, leavers and level of turnover on a monthly basis. It is clear that the number employed declined during the first half of the year, with most of the decline being associated with a small redundancy programme initiated in January. Total employment reached a low of 825 in July and then grew to 883 at the year end. The overall quit rate for the year was 18.5%. Voluntary leaving was equally divided between the two half years, although the monthly value of the annualised voluntary quit rate shows an extremely wide fluctuation. There is some suggestion that the redundancies in January did lead to a falling off in the voluntary quit rate, which then 'recovered' when the firm started to expand employment.

In Table 10.13 we breakdown the number leaving by sex and reason for leaving. Voluntary leaving accounted for about 60% of both

Table 10.12 Monthly Turnover in the Company

Month		No. at start of period	St.	Lv.	Annual TO	Invol TO		Voln TO	
						No.	% p.a.	No.	% p.a.
Jan	1	889	4	42	57.9	27	37.2	15	20.7
	2	851	1	13	18.4	6	8.5	7	9.9
	3	839	6	13	18.7	7	10.1	6	8.6
	4	832	9	11	15.9	4	5.8	7	10.1
	5	830	4	8	11.6	1	1.5	7	10.1
	6	826	8	9	13.1	3	4.4	6	8.7
	7	825	11	8	11.6	3	4.3	5	7.3
	8	828	26	11	15.8	3	4.3	8	11.5
	9	843	39	12	16.8	5	7.0	7	9.8
	10	870	22	12	16.4	3	4.1	9	12.3
	11	880	25	8	10.8	2	2.7	6	8.1
Dec	12	897	3	17	22.9	3	4.0	14	18.9
Yr End		883	158	164	18.5	67	7.6	97	10.9

Key: St. = Starters ; Lv. = Leavers ; TO = Turnover

Table 10.13 Reasons For Leaving by Sex

Reason	Males No.	Males %	Females No.	Females %	All No.	All %
Own accord/unspecified	46	42.2	19	34.5	65	39.6
Leaving district	7	6.4	2	3.6	9	5.5
Personal	5	4.6	5	9.1	10	6.1
To associated company	8	7.3	3	5.5	11	6.7
Pregnancy	0	-	2	3.6	2	1.2
All voluntary	66	60.5	31	56.3	97	59.1
Retired	10	9.2	1	1.8	11	6.7
Deceased	3	2.8	0	-	3	1.8
Dismissed	8	7.3	3	5.5	11	6.7
Redundant	14	12.8	19	34.5	33	20.1
Health	8	7.3	1	1.8	9	5.5
Total	109	100.0	55	100.0	164	100.0

male and female quitting. It is interesting to note that there was some movement to associated companies with 11 workers making such a 'voluntary' move. Male involuntary quitting was associated with a variety of reasons but the majority of the female involuntary quitting was due to redundancy.

Table 10.14 shows that the voluntary quit rates for males and females were about equal at 11% p.a. However, the involuntary leaving rate for females was marginally greater than for males. In Table 10.14 we also make the distinction between controllable and unavoidable turnover and it is noticeable that controllable turnover

Table 10.14 Involuntary, Voluntary, Unavoidable and Controllable Turnover by Sex

	Av No Empl.	Invol No.	Invol % pa	Vol No.	Vol % pa	Unav No	Unav % pa	Cont No.	Cont % pa	All No.	All % pa
M	602.5	43	7.1	66	11.0	21	3.5	88	14.6	109	18.1
F	283.5	24	8.5	31	10.9	4	1.4	51	18.0	55	19.4
T	886.0	67	7.6	97	10.9	25	2.8	139	15.7	164	18.5

dominated. It is also evident that unavoidable turnover was much higher for males.

Table 10.15 compares the leaving rates (involuntary and voluntary) of each occupation during the period. Voluntary turnover was high among technicians (22.2%) and office workers (21.0%), and above the company average for semi-skilled machinists (13.8%) and male other non-craft production workers (11.4%). Voluntary quitting was non-existent for engineers and scientists and very low among managers, professional and related workers, office supervisors, foremen and female other non-craft production workers. Involuntary quitting was highest among this latter group of workers mainly because of 15 redundancies among the female non-craft production workers.

Table 10.16 presents the number of voluntary leavers by completed length of service. It is immediately clear that a large

Table 10.15 Involuntary and Voluntary Turnover by Occupation

Occn.	Av. No. Empl.	Voluntary Turnover No.	%	Involuntary Turnover No.	%	Total Leavers No.	%
1.	30.5	1	3.3	-	-	1	3.3
2.	25.0	1	4.0	1	4.0	2	8.0
3.	9.5	-	-	1	10.5	1	10.5
4.	31.5	7	22.2	1	3.2	8	25.4
5.	124.0	26	21.0	9	7.3	35	28.3
6.	19.5	1	5.1	1	5.1	2	10.2
7.	37.5	1	2.7	3	8.0	4	10.7
8.	65.5	7	10.7	3	4.6	10	15.3
9.	173.5	24	13.8	17	9.8	41	23.6
10.	122.5	14	11.4	4	3.3	18	14.7
11.	96.5	8	8.3	10	10.4	18	16.0
12.	150.5	7	4.7	17	11.3	24	16.0
Total	886.0	97	10.9	67	7.6	164	18.5

proportion have low lengths of service; almost 55% of both male and female voluntary leavers have less than 3 years' service. Voluntary leaving is exceptionally low for those with 11 or more years' service. Only 6 males leave for voluntary reasons out of a total of 225 with such service (a quit rate of 2.7%), and only 1 female leaves voluntarily out of a total of 42 female workers with such service.

Running a Chi-Square test to see if the number of voluntary leavers, both males and females combined, was related to length of service (workers with 4 to 6 years' service were taken as one group, as were those with 16-26 years' and 26 years' or more), we obtained an actual value for X^2 of 44.0 which far exceeds that of the critical value for (9-1) degrees of freedom at the 1% probability level (20.1). In other words, the number of workers leaving the company is not

Table 10.16 Completed Length of Service (in years) of Voluntary Leavers

Compl. Service Group	No. in relevant Service Category			Voluntary Leavers					
				Male		Female		Total	
	M	F	T	No.	%	No.	%	No.	%
0- 1	106	50	156	14	13.2	5	10.0	19	12.2
1- 2	53*	23	76*	12	22.6	7	30.4	19	25.0
2- 3	59	44	103	10	16.9	6	13.6	16	15.5
3- 4	43	45	88	3	7.0	6	13.3	9	10.2
4- 5	35	35	70	5	14.3	4	11.4	9	12.9
5- 6	31	14	45	5	16.1	-	-	5	11.1
6-11	155*	83	238*	11	7.1	2	2.4	13	5.5
11-16	79	21	100	2	2.5	1	4.8	3	3.0
16-21	47	5	52	1	2.1	-	-	1	1.9
21-26	31	8	39	1	3.2	-	-	1	2.6
26-31	33	6	39	1	3.0	-	-	1	2.6
31 +	35	2	37	1	2.9	-	-	1	2.6
Total	707	336	1043	66	9.3	31	9.2	97	9.3

* In each case, 1 male worker joined the company in 1976 from an associated company within the Group, one with between 1 and 2 years' service and one with between 6 and 11 years'.

constant across the various completed length of service categories.

In Chapter 5 (Tables 5.2 and 5.3) we computed estimates of the average manufacturing quit rates for males and females with different lengths of service in 1968, 1976 and 1980. The quitting behaviour in Company A in 1976 can be compared with these estimates, and the relevant information is presented in Tables 10.17 and 10.18. It is clear that quitting in Company A differs markedly from the national average. New male recruits to the company seem to have a markedly lower quit rate (19.8%) than the estimate for the national average (39.3%) in 1976. However, the leaving rate for male core workers in the company at 14.6% was only marginally lower than the average for all manufacturing (18.1%). Female workers in Company A also seem to experience much lower rates of quitting than females in general. Women with less than one year's service for example have an overall quit rate that is dramatically lower (12.0%) than the

Table 10.17 Male Leavers by Completed Length of Service

Service Group	No. in Group	All Leavers No.	All Leavers Rate %	Vol Leavers No.	Vol Leavers Rate %
0-1 yr	106	21	19.8	14	13.2
1 yr +	601	88	14.6	52	8.7

Table 10.18 Female Leavers by Completed Length of Service

Service Group	No. in Group	All Leavers No.	All Leavers Rate %	Vol Leavers No.	Vol Leavers Rate %
0-1 yr	50	6	12.0	5	10.0
1-2 yrs	23	8	34.8	7	30.4
2 yrs +	263	41	15.6	19	7.2

manufacturing average (45.3%), while core workers with more than two years' service have an overall quit rate that is three quarters the national average. The small group of females in Company A with between 1 and 2 years' service however appear to be particularly unstable and have a high rate of voluntary quitting.

Finally, comparing quit rates between males and females within the company itself, we see that females with up to one year's service have lower quit rates than males in the same category. Females with more than 2 years' service have a quit rate of 15.6%, slightly higher than the equivalent rate for males of 13.7% (not shown). This is something of a surprise because the length of service distributions presented earlier in Table 10.6 show a far higher proportion of females in short service groups than males (56.1% of females had less than 5 years' service compared with 36.7% of males for example).

10.7 The Dynamics of Occupational Change

So far we have just considered the numbers joining and leaving the company during the year. It is now time to consider the nature and compositon of these movements, together with internal labour market movements within the factory.

Matrix A of Table 10.19 shows the occupation and function of the 158 workers joining the company in 1976. Over one quarter of those recruited were semi-skilled machinists, all of whom joined the company in 'production operations'. Another quarter joined in the office worker category, the majority here being recruited to

Table 10.19 Breakdown of Gains by Occupation and Function, Company A

A: STARTERS: EXTERNAL

	A	B	C	D	E	F	G	Total
1	2*					1		3
2						1		1
3								
4			3			3	2	8
5	2		4	2		26	3	37
6								
7								
8	9*							9
9	43							43
10	26							26
11	8			2			2	12
12	19							19
Total	109		7	4		31	7	158

B: INTERNAL MOBILITY: CHANGE OCCUPATION BUT NOT FUNCTION

	A	B	C	D	E	F	G	Total
1						1		1
2								
3								
4								
5	1							1
6								
7	3			1				4
8								
9	2							2
10	2							2
11	4			1		1		6
12								
Total	12			2		2		16

* Includes one person who transferred from an associated company.

C: INTERNAL MOBILITY: CHANGE OCCUPATION AND FUNCTION

	A	B	C	D	E	F	G	Total
1								
2								
3								
4			1					1
5		1						1
6	1							1
7								
8								
9	1							1
10								
11								
12								
Total	2	1	1					4

D: INTERNAL MOBILITY: CHANGE FUNCTION BUT NOT OCCUPATION

	A	B	C	D	E	F	G	Total
1								
2								
3								
4			1					1
5	2					1		3
6				1				1
7								
8								
9								
10								
11								
12							1	1
Total	2		1	1		1	1	6

'commercial, management and administrative services'. Only 2 workers joined the company from associated companies within the Group. We also see that two-thirds of those recruited were manual workers employed in 'production operations'. The only other functional area to receive a fairly large proportion of starters was 'commercial, management and administrative services' where one-fifth of new workers were taken on.

Turning to occupational mobility in the firm we shall, once again, restrict our analysis to mobility between two or more occupational groups from our chosen classification, ignoring any changes taking place within each occupational category. Matrices B, C and D present the number of workers joining particular occupations and/or functions within the company. A total of 16 workers changed occupation while remaining in the same functional area. The most significant piece of internal mobility has been the promotion of 4 workers to foremen, 3 of whom were promoted within 'production operations'. We also see that one worker was promoted to manager during the year. Four workers changed both their occupation and function, while a further 6 moved between functional areas while keeping the same occupation.

Table 10.20 breaks down those people leaving certain occupations and/or functions either because they were quitting the company altogether or because they were moving to other occupations and/or functions within it. Matrices E, F and G show the number leaving the company for voluntary and involuntary reasons. As before, we see there were 67 involuntary leavers and 97 voluntary

Table 10.20 Breakdown of Losses by Occupation and Function, Company A

E: INVOLUNTARY LEAVERS

	A	B	C	D	E	F	G	Total
1								
2						1		1
3						1		1
4						1		1
5	1		2	1		4	1	9
6						1		1
7	2	1						3
8	1	2						3
9	17							17
10	4							4
11	4	5		1				10
12	17							17
Total	46	8	2	2		8	1	67

G: OTHER VOLUNTARY LEAVERS

	A	B	C	D	E	F	G	Total
1						1		1
2						1		1
3								
4			2		1	3	1	7
5	3		2	1		15	2	23
6	1							1
7	1							1
8	2	1						3
9	22							22
10	13							13
11	3			3			2	8
12	6							6
Total	51	1	4	4	1	20	5	86

I: INTERNAL MOBILITY: CHANGE OCCUPATION AND FUNCTION

	A	B	C	D	E	F	G	Total
1								
2								
3								
4								
5								
6								
7				1				1
8								
9	1							1
10						1		1
11								
12	1							1
Total	2			1		1		4

F: VOLUNTARY LEAVERS TO ASSOCIATED COMPANIES

	A	B	C	D	E	F	G	Total
1								
2								
3								
4								
5	1			1		1		3
6								
7								
8	2	2						4
9	2							2
10	1							1
11								
12	1							1
Total	7	2		1		1		11

H: INTERNAL MOBILITY: CHANGE OCCUPATION BUT NOT FUNCTION

	A	B	C	D	E	F	G	Total
1								
2						1		1
3								
4								
5				2				2
6								
7								
8								
9	5							5
10	5					1		6
11	1							1
12	1							1
Total	12			2		2		16

J: INTERNAL MOBILITY: CHANGE FUNCTION BUT NOT OCCUPATION

	A	B	C	D	E	F	G	Total
1								
2								
3								
4							1	1
5	1					2		3
6						1		1
7								
8								
9								
10								
11	1							1
12								
Total	2					3	1	6

ones, 11 of whom left to join associated companies within the Group. One quarter of those leaving were semi-skilled machinists (41 workers), with another 25% leaving from other non-craft production (18 male and 24 female). Matrix H shows the old occupations of those 16 workers who changed their occupation but not their functional area. These were mainly confined to semi-skilled machinists (5 workers) and other non-craft production workers (6 males and 1 female). Only 4 workers changed both their occupation and function during the year (matrix I), while a further 6 workers maintained the same occupation while changing their function.

It is clear that much of the labour movement in the firm consisted of workers joining the company from the external labour market to replace those who left. For example, 156 out of 178 workers (87.6%) moving into new occupations were from the external market. Another 37 workers (4.2% of the number employed) used the Group's internal labour market to either move from Company A to other companies within the Group (11 workers), or to change their occupation (16), their function (6), or both (4) within the company itself. We have also seen how the internal labour market was seldom used for the purposes of upward occupational mobility, with the 20 significant occupational changes taking place during the year (matrices B and C) only amounting to 2.2% of the number employed at the beginning of the year.

Aggregating the gain and loss matrices and subtracting one from the other we arrive at the net change matrix shown in Table 10.21. This shows a net increase of more than 10% in the number of

Table 10.21 Net Change Matrix, Occupation and Function

	Function								
Occn.	A	B	C	D	E	F	G	Total	% of initial stock
1	2					1		3	11.1
2						-2		-2	-7.7
3						-1		-1	-10.0
4			3		-1	-1	0	1	3.2
5	-1	1	0	-3		5	0	2	1.6
6	0			1		-2		-1	-5.0
7	0	-1		0				-1	-2.6
8	4	-5						-1	-1.5
9	-1							-1	-0.6
10	5					-2		3	2.5
11	3	-5		-1		1	1	-1	-0.6
12	-7							-7	-7.2
Total	5	-10	3	-3	-1	-1	1	-6	-0.7
% of initial stock	0.9	-19.2	11.1	-4.9	-33.3	-0.7	3.2	-0.7	

managers employed by the company during the year. There was also a net increase of 2.5% in the number of male other non-craft production workers, while the number of females in this occupation fell by 7.2%. Although net changes in some of the other occupations might appear sizeable when expressed as a percentage of the initial stock (e.g. professional and related workers and professional, engineers and scientists), it must be remembered that the number employed in these occupations was small. Some of the net changes in the functional areas might also appear high for the same reason. The one exception was in 'installation, maintenance and repair' where there was a net contraction of 19.2% in the number employed during the year.

We are now in a position to measure the level of labour market activity within the company (Table 10.22). As before, we are

Table 10.22 Labour Market Activity - Gross Loss Minus Involuntary Leavers as a % of the Number Employed on January 1st 1976 (*)

	Function							
Occn.	A	B	C	D	E	F	G	Total
1.	0.0					10.0		3.4
2.						10.5		7.7
3.			0.0					0.0
4.			25.0			13.6		25.8
5.	13.9		33.3	26.7		29.0		25.2
6.	16.7					8.3		10.0
7.	4.3	0.0		16.7				5.3
8.	8.7	15.0						10.6
9.	17.5							17.5
10.	16.8					33.3		17.4
11.	26.3	0.0		8.6			8.3	9.3
12.	5.8							5.8
Total	12.8	5.8	14.8	13.1		20.0	19.4	13.8

(*) Cells are only represented when the number employed in a given occupation and function is 6 or more. These 25 cells accounted for 858 of the 889 (96.5%) employees on the 1st of January 1976.

only interested in those movements initiated by the individual and consider voluntary leaving plus significant changes within the factory. The greatest degree of labour market activity, twice the average for the company, occured among technicians and draughtsmen, closely followed by office workers. Semi-skilled machinists and male other non-craft production workers also displayed high rates of labour market activity with just over 17% either leaving the company voluntarily or changing jobs within it. Contrast this with the situation concerning professional engineers and scientists where there was no labour market activity, admittedly in a group of only ten workers. Labour market activity was low among the two critical categories of managers and foremen. It is interesting to see that female other non-craft production workers displayed considerably

greater labour market stability than their male colleagues. Voluntary movement among males in this occupation was such that half the jobs would change hands in 2.9 years. Females in the same occupation were much more stable as it would take up to 9 years before half the jobs change hands. It is slightly surprising therefore to see the company recruiting more male other non-craft production workers than females.

We also see that labour market activity was greatest in the service areas (functions F and G) while in the dominant area of 'production operations' it was slightly below average and extremely low in 'installation, maintenance and repair'. Considering labour market activity in individual cells can highlight potential problem areas where such activity might be considered excessive. This might be the case for clerical workers in 'organisation and support' and male other non-craft production workers in 'commercial, management and administrative services'. However, both these cells only contained 6 employees at the beginning of the year.

Thus, we see that annual turnover in Company A was close to 18.5% for both males and females and was considerably below the average for all manufacturing in 1976, see Figure 5.1. Well over one third of this turnover was involuntary. However, one half of this involuntary turnover was due to the 33 redundancies declared by the company. One of the most important observations is that turnover for females need not be high. Even female recruits to routine production work have considerable stability, more than their male counterparts. However, as we shall see in the next chapter, there is some evidence

to suggest that female non-craft production workers are still treated as secondary sector employees because they fail to participate in the internal labour market.

Chapter 11 Company A: A Five Year Analysis of Labour Market Activity

In this chapter we examine both the nature and extent of labour market activity within Company A for the period 1976-80. It is our intention here to identify any important changes taking place over time, paying particular attention to changes in the occupational and functional mix of the workforce and the source of these changes.

Tables 11.1 and 11.2 present the number employed by occupation and function on the 1st of January each year using the same code numbers and letters as in Chapter 10. While employment remained static in 1976, it increased by 124 workers in 1977. Much of the expansion occured among low skilled manual workers employed in 'production operations' and 'materials control and movement', the increase being particularly concentrated among male other non-craft

Table 11.1: Number Employed by Occupation as at 1st January

	Year					
Occup.	1976	1977	1978	1979	1980	1981
1.	29	32	37	36	31	31
2.	26	24	26	27	17	20
3.	10	9	8	8	9	6
4.	31	32	32	32	28	28
5.	123	125	137	127	90	65
6.	20	19	19	21	19	18
All N-M	239	241	259	251	194	168
7.	38	37	38	38	27	26
8.	66	65	64	70	58	56
9.	174	173	195	177	139	132
10.	121	124	167	183	136	132
11.	97	96	109	113	78	59
12.	154	147	175	177	126	126
Total	889	883	1007	1009	758	699

Table 11.2: Number Employed by Functional Area as at 1st January

Function	Year 1976	1977	1978	1979	1980	1981
A	580	585	682	686	523	510
B	52	42	45	47	33	27
C	27	30	33	32	27	19
D	61	58	72	73	46	32
E	3	2	3	3	2	3
F	135	134	140	136	104	91
G	31	32	32	32	23	17
Total	889	883	1007	1009	758	699

production workers. There was also a small increase in the clerical workforce. Employment in the company remained constant in 1978, but fell thereafter by about 30%. This reduction was partially achieved by two sets of redundancies; 141 workers were declared redundant in the 4th quarter of 1979 and a further 52 in the last quarter of 1980. Taking the two years 1979 and 1980 together, the most dramatic fall took place in the clerical and other manual occupations where employment fell by almost half. By contrast there was a much smaller decline in the number of managers, technicians and draughtsmen, and office supervisors, with the two-year fall averaging 13.6% for these occupations. Turning to the functional areas, the largest fall during 1979-80 occurred in 'materials control and movement' (56.2%), and the smallest in 'production operations' (25.7%).

In Tables 11.3 and 11.4 we present quarterly figures for male and female turnover in 1976-80. Taking the male figures first we see there was a doubling in the level of external recruitment in 1977. This fell back slightly in 1978, and showed a substantial fall in 1979 and 1980. Declining recruitment in 1979 was used to reduce

Table 11.3: Quarterly Turnover of Male Employees

		Starters	Leavers	Annualised Percentage Involuntary Leaving	Voluntary Leaving
1976	1	8	41	13.6	14.3
	2	15	20	4.9	9.2
	3	55	20	6.2	7.6
	4	30	28	4.7	14.0
1976		108	109	7.1	10.9
1977	1	51	20	4.5	8.4
	2	60	34	7.4	13.6
	3	48	31	6.6	12.0
	4	41	29	4.7	12.3
1977		200	114	5.9	11.8
1978	1	42	37	6.9	14.5
	2	35	47	5.8	21.5
	3	60	43	7.0	18.0
	4	42	42	4.6	19.5
1978		179	169	6.1	18.3
1979	1	31	40	12.7	10.4
	2	18	37	7.6	14.1
	3	9	44	8.6	18.4
	4	0	103	61.0	9.6
1979		58	224	22.4	14.0
1980	1	3	10	0.8	6.8
	2	25	19	6.1	8.3
	3	20	19	5.3	9.0
	4	8	44	31.1	3.1
1980		56	92	10.9	7.0

total employment and clearly foreshadowed the redundancies at the end of this year. Voluntary quitting, while tending to vary quite considerably on a quarterly basis, did undergo an increase between 1976 and 1978. For example, it was 50% higher in 1978 than it was in

1977. That said however, it is noticeable that voluntary quitting always fell in the aftermath of any redundancies. We see this happening after a number of workers were made redundant in the first quarter of 1976; and, in the wake of the redundancy programme in the fourth quarter of 1979, voluntary quitting in 1980 was again extremely low. The level of involuntary quitting among males was close to 6% in 1977 and 1978, the two years when this figure was not inflated by redundancies. Finally, Table 11.3 is important because it shows how the balance between voluntary and involuntary quitting can change. In 1978 involuntary male quitting accounted for one quarter of the total turnover of 24.4%. In contrast, involuntary quitting accounted for almost two-thirds of total turnover in both 1979 and 1980.

In Table 11.4 we note that the average for female voluntary quitting in each year is similar to the male average, though far more variable within each year. This unexpected observation for 1976 is thus confirmed as being the typical experience for Company A. We also notice that, as before, voluntary turnover dominated in the first three years but fell below the involuntary rate in 1979 and 1980 as redundancies increased involuntary quitting and made workers less willing to give up their jobs. Also noticeable is the fact that redundancies had a proportionately greater affect on women than men, particularly in 1979. Finally, if we exclude redundancies from the involuntary rate we see that involuntary quitting among females in the company was around 4% p.a.

Breaking voluntary quit rates down by occupation in Table

Table 11.4: Quarterly Turnover of Female Employees

		Starters	Leavers	Annualised Involuntary Leaving	Percentage Voluntary Leaving
1976	1	3	27	29.2	10.2
	2	6	8	1.5	10.7
	3	21	11	3.0	13.6
	4	20	9	1.5	11.6
1976		50	55	8.5	10.9
1977	1	31	16	6.9	15.2
	2	21	12	6.7	9.3
	3	18	18	0.0	23.6
	4	26	12	2.6	12.8
1977		96	58	4.0	15.3
1978	1	25	21	6.2	19.9
	2	11	17	2.5	18.7
	3	17	24	10.2	20.4
	4	11	10	0.0	12.9
1978		64	72	4.8	18.1
1979	1	15	13	3.8	12.8
	2	4	17	9.1	13.0
	3	4	7	1.3	8.0
	4	4	75	91.8	22.9
1979		27	112	26.4	15.3
1980	1	6	10	5.4	12.5
	2	18	10	8.8	8.8
	3	7	9	3.5	12.2
	4	0	25	42.7	3.7
1980		31	54	15.4	9.8

11.5 shows there is great variation between occupations and, to a lesser extent, within occupations on a year to year basis. While voluntary turnover is low among office supervisors and foremen (it is below the company average for each year), it is extremely high among

Table 11.5: Voluntary Quit Rates by Occupation, 1976-80

	Year				
Occup	1976	1977	1978	1979	1980
1.	3.3	5.8	16.4	11.9	3.2
2.	4.0	0.0	7.5	31.8	10.8
3.	0.0	11.8	12.5	11.8	0.0
4.	22.2	12.5	6.2	10.0	7.1
5.	21.0	14.5	25.8	24.0	18.1
6.	5.1	10.5	0.0	10.0	5.4
7.	2.7	8.0	0.0	3.1	0.0
8.	10.7	9.3	11.9	10.9	10.5
9.	13.8	15.2	23.1	17.1	7.4
10.	11.4	13.7	28.0	13.2	4.5
11.	8.3	11.7	14.4	15.7	16.1
12.	4.7	15.5	13.1	8.6	3.2
Total	10.9	12.9	18.3	14.4	7.8

office workers where it always exceeds the overall average. Voluntary quitting among craftsmen on the other hand is very steady, averaging 10.7% p.a. over the period. The proportion of other manual workers voluntarily quitting almost doubles, undergoing a steady increase from 8.3% in 1979 to 16.1% in 1980. We also see that, with the exception of 1977, voluntary quitting among female other non-craft production workers was lower than that for their male counterparts and for the company as a whole.

In Table 11.6 we present involuntary quit rates broken down by occupation. To facilitate the analysis we show separately the proportion being made redundant in the three years 1976, 1979 and 1980. In 1976 almost 4% of the company's workforce were made redundant. The occupation affected most was female other non-craft production with 10% being made redundant. The similar rate among professional engineers and scientists represents one redundancy from a group of only ten workers. The large redundancy in 1979 affected

Table 11.6: Involuntary Quitting Rates by Occupation 1976-80

Occup	Year 1976 Redn.	1976 All Invol	1977	1978	1979 Redn.	1979 All Invol	1980 Redn.	1980 All Invol
1.	0.0	0.0	0.0	0.0	6.0	14.9	3.2	6.4
2.	0.0	4.0	8.0	0.0	9.1	22.7	0.0	0.0
3.	10.5	10.5	0.0	0.0	11.8	11.8	26.7	26.7
4.	3.2	3.2	3.1	6.2	10.0	16.7	7.1	10.7
5.	2.4	7.3	2.3	9.8	15.7	28.6	23.2	31.0
6.	0.0	5.1	0.0	0.0	20.0	20.0	0.0	5.4
7.	2.7	8.0	2.7	2.6	27.7	30.8	11.3	11.3
8.	4.6	4.6	0.0	1.5	7.8	18.7	5.3	5.3
9.	2.3	9.8	8.7	5.9	15.2	19.6	2.2	5.2
10.	0.0	3.3	7.6	10.3	13.8	19.4	4.5	7.5
11.	5.2	10.4	11.7	6.3	17.8	34.6	14.6	39.4
12.	10.0	11.3	2.5	2.3	23.1	27.1	3.2	5.6
Total	3.7	7.6	5.3	5.6	16.0	23.6	7.1	12.2

16.0% of the labour force. The occupations least affected include managers, technical and professional workers, and craftsmen, while those most affected include office supervisors, foremen and female other non-craft production workers. The 1980 redundancy programme affected 7.1% of the total workforce, but was particularly concentrated among clerical workers where almost one quarter lost their jobs. Involuntary quitting rates, after allowing for redundancy, show a wide variation between occupations. In particular, much involuntary turnover in the company (redundancies included) was concentrated among manual and clerical workers where unpredictable elements such as dismissals and temporary employment were important (see Table 11.10 for further analysis).

We now come to examine the extent of labour market activity within the firm and the relative importance of the internal and external labour markets. In Table 11.7 we take the average rates of

Table 11.7: Quitting and Labour Market Activity: Average Rates by Occupation, 1976-80

Occup	Voluntary	Labour Market	Factory Lab. Market	Involuntary (*)
1.	8.1	10.0	1.9	2.4
2.	10.8	16.0	5.2	5.1
3.	7.2	17.4	10.2	0.0
4.	11.6	17.5	5.9	3.9
5.	20.7	26.7	6.0	7.5
6.	6.2	11.3	5.1	2.1
7.	2.8	6.8	4.0	2.7
8.	10.7	15.4	4.7	2.5
9.	15.3	19.7	4.4	5.9
10.	14.2	17.6	3.4	6.0
11.	13.2	18.7	5.5	13.0
12.	9.0	9.6	0.6	2.5
Total	12.9	16.8	3.9	5.5

(*) Excluding redundancies.

voluntary and involuntary quits (excluding redundancies) over the five years 1976-80, as well as the average level of labour market activity for the 12 occupational groups. The latter consists of voluntary quitting plus significant changes in occupation and/or functional area within the factory. Subtracting the voluntary quit rate from labour market activity gives an average value for the importance of the factory labour market to each occupation. Thus we see that approximately 4% of workers made a significant internal change each year. Obviously, workers in some occupations undertake greater internal mobility than others; on the non-manual side for example office workers and technicians and draughtsmen make much greater use of the factory labour market than managers (workers at the managerial level clearly have no scope for upward occupational mobility), while on the manual side only female other non-craft production workers fail to make a significant number of internal

changes. We also see in Table 11.7 considerable variations in both voluntary and involuntary quit rates among the various occupations. Particularly noticeable is the 13.0% level of involuntary quitting (excluding redundancies) among other manual workers.

Table 11.8 shows the relative importance of the internal and external labour markets in meeting the manpower needs of the factory in each of the years 1976-80. A small minority of starters are making use of the company-wide labour market and joining the factory from associated companies. However existing employees are also responding to the manpower needs of the factory by making significant changes in occupation and/or function, and the number of such changes in each year is also shown in Table 11.8. It is clear that relatively little use was made of the company's internal labour market in the first three years, with the major part of the factory's manpower needs being met via recruitment from the external labour market. After 1978 however, the factory made greater use of its own

Table 11.8: The Importance of Internal and External Labour Markets

	External	←—— Internal Labour Market ——→				
	Labour Market	Assoc Co.s	Change O + F	Change O only	Change F only	Total
1976	156	2	4	16	6	28
1977	281	15	9	27	10	61
1978	235	8	5	13	8	34
1979	81	4	6	26	14	50
1980	78	9	8	14	7	38
Total	831	38	32	96	45	211

Key: O = Occupation ; F = Function.

internal labour market for meeting manpower needs as declining business orders forced it to reduce its total employment by drastically cutting back on its external recruitment and eventually declaring redundancies. Throughout the five years there were 211 changes using the company labour market. Of these, 38 involved joining the factory from another company within the Group (it was not possible to ascertain whether these moves also involved a change of occupation) and 128 resulted in a change of occupation within the factory. Occupational change, as a proportion of the average number employed, varies between 3.8% in 1977 and 1.8% in 1978 with an average value of 2.9%. Only 45 workers changed their functional area without changing their occupation as well.

In Table 11.9 we present the source of significant changes in employment in the factory in the form of an occupational mobility matrix. Partitioning this matrix into four shows, in the lower left sub matrix, that 23 manual workers moved to become either foremen or non-manual employees. Thus, while 14 manual workers were promoted to foremen (most of these were semi-skilled machinists), 4 craftsmen and one semi-skilled machinist joined the ranks of technicians and draughtsmen, one craftsmen became a professional engineer and 3 manual workers moved to clerical positions. Consideration of the upper left sub matrix shows the occupational mobility of non-manual workers and foremen. This was generally in an upward direction but one manager did become an office supervisor and one professional and related employee was demoted to office worker. A total of 8 workers were promoted to manager during the period (including 2 foremen, one office supervisor and 3 professional engineers and scientists), and

Table 11.9: Source for any Significant Changes in Factory Employment (*)

	1	2	3	4	5	6	7	8	9	10	11	12	Total	Change Function
1						1							1	2
2	1				1	2							4	2
3	3	1											4	0
4	1	1	2			1							5	4
5		4		1		4	4				1	2	16	17
6	1	1		1									3	2
7	2				1	2				2			7	0
8			1	4			2						7	8
9				1			8	2		18	7		36	1
10							2	2	6		13		23	2
11					1		1	1	5	9			17	7
12					2		1		2				5	0
Total	8	7	3	7	5	10	18	5	13	29	21	2	128	45
Assoc Co.s	5	3	0	2	4	0	0	7	9	5	1	2	38	
Co. L Market	13	10	3	9	9	10	18	12	22	34	22	4	166	
Ext. L Market	11	8	4	22	148	2	1	38	187	184	108	118	831	
Total	24	18	7	31	157	12	19	50	209	218	130	122	997	

(*) Matrix shows occupational mobility, with the old occupation in rows and the new occupation in columns.

10 employees became office supervisors. The lower right sub-matrix shows that there were 65 occupational changes within the manual category. While a number of these job changes can be considered movements up an occupational hierarchy - e.g. from other non-craft production to semi-skilled machinists (8 workers) or to craftsmen (2 workers) - a number of others consisted of lateral or downward movements including the 18 male semi-skilled machinists who became other non-craft production workers. The upper right sub-matrix shows that 5 non-manual workers or foremen were 'demoted' to a manual occupation. Finally, the limited promotion prospects available to

female non-craft production workers can be clearly seen; two became clerical workers, one was promoted to forewomen/supervisor level and two became semi-skilled machinists. Thus, there was an average of one promotion a year from a group of 150 workers (see Table 11.1).

Table 11.9 also gives the occupations of 38 workers who join the factory from associated companies and of the 831 workers who were recruited from the external labour market. We note that office supervisors and foremen are, in the main, recruited within the factory; 10 out of 12 supervisors and 18 out of 19 foremen were recruited this way. The company-wide labour market is also important for filling posts at the managerial and professional level. There were also 45 changes of functional area within the factory. These sideways movements are clearly less important than occupational/ inter-factory changes and tended to be concentrated among clerical workers and craftsmen.

Table 11.10 charts the reasons for leaving by occupation for all leavers between 1976 and 1980. There were 587 voluntary leavers (mainly clerical and manual), 27 of whom left to join associated companies within the Group and 18 because of pregnancy. Another 246 workers left the company involuntarily (excluding redundancies), with dismissals accounting for a large number of these. Clearly, the company is not afraid to dismiss anyone not meeting their requirements, as 22 male other non-craft production workers, 21 semi-skilled machinists and 14 clerical workers can testify. Another important aspect of company policy is to recruit some workers for short periods of time, with 20 other manual workers

Table 11.10: Reason For Leaving by Occupation - All Leavers in 1976-80

	1	2	3	4	5	6	7	8	9	10	11	12	T
To Ass Co	4	2			8	1	1	5	3	1	1	1	27
Pregnant					6				1		1	10	18
Other Vol	10	10	3	18	105	5	4	29	128	109	60	61	542
All Vol	14	12	3	18	119	6	5	34	132	110	62	72	587
Retired	3	5			10		3	4	9	13	18	6	71
Deceased	1	1		1	4	1			7	2	2	2	21
Dismissed				4	14		2	4	21	22	7	3	77
Health					5	1			14	8	10	8	46
End of TE				1	9					1	20		31
All Invol *	4	6	0	6	42	2	5	8	51	46	57	19	246
Total *	18	18	3	24	161	8	10	42	183	156	119	91	833
Redundancy	3	2	4	6	38	4	13	11	31	28	32	54	226

* Excluding redundancies

and 9 clerical workers leaving after completing a stint of temporary employment. The comparatively high number of manual and clerical workers leaving for both these reasons explains the high level of involuntary quitting which was noted for these occupations in Table 11.7. It is also interesting to note the large proportion of professional and related and other manual workers who either retire or die during the period. One third of the total number of professional and related leavers for example 'left' the company this way, and 20 other manual workers were similarly affected. Thus, our expectation in Chapter 10 that both these occupations were going to face such problems over the next five years because of their high proportion of workers in the 60-64 age range (Table 10.5) is borne out here.

An important aspect which has emerged in earlier chapters (Chapters 5 and 7) is the quitting behaviour of workers with different lengths of service. Tables 11.11 and 11.12 take the stock of workers at the end of June 1976 and divide these into two groups based on their length of service. Thus, 469 males have more than two years' service (column headed 'before July 1974') and can be considered as long serving or core workers, while 96 joined in the previous two years (column headed 'July 1974–June 1976') and can be considered as having an average of one year's service. The table shows the number leaving in each six monthly interval (1–6 represents July to December 1976, 7–12 January to June 1977, etc.) and the lower section of the table shows the cumulative decline of these two elements of the manpower stock. The tables also consider the cohorts of starters from the external labour market (i.e. they ignore transfers from associated companies) in each six monthly interval between July and December 1976 (months 1–6) and January to June 1979 (months 31–36). The rate of decline of these cohorts is the wastage rate measure of labour turnover discussed in Chapter 4.3 (c). Such a measure is of especial interest in understanding the process of labour turnover (see discussion of the "Social Process Theory of Labour Turnover" in Chapter 6.2) although it must be emphasised that many of the cohorts, especially for females, are small in size.

The group of male core workers (Table 11.11) declined by 34 or 7.2% during the first year (4.0% voluntarily and 3.2% involuntarily) and by 9.2% in the second year (5.3% voluntarily and 3.9% involuntarily). The 96 male workers with an average of one year's service have 19 leavers in the first year, an annual quit rate

Table 11.11: Male Wastage (*) For Stock at 1st July 1976 and Six Monthly Cohorts of Starters

	←— Stock —→		Starters in Six Monthly Periods					
Start Date	Before July 74	July 74 –June 76	1–6	7–12	13–18	19–24	25–30	31–36
Cohort	469	96	84	102	86	74	98	45
1– 6 V	12	7	13					
I	8	5	3					
7–12 V	7	7	8	13				
I	7	0	4	8				
13–18 V	14	3	3	13	8			
I	8	0	1	2	8			
19–24 V	11	5	4	7	22	11		
I	10	0	1	1	5	5		
25–30 V	9	5	3	12	9	10	15	
I	4	2	0	1	1	3	9	
31–36 V	6	6	2	3	1	3	12	8
I	17	0	1	3	4	2	2	5
37–42 V	8	3	3	3	3	8	8	5
I	62	13	3	6	2	2	5	6
43–48 V	4	1	0	3	2	3	2	2
I	3	0	0	1	0	1	1	1
49–54 V	0	2	5	1	0	2	1	0
I	15	2	2	3	3	0	4	1
% remaining after:								
6 months	95.7	87.5	80.9	79.4	81.4	78.4	75.5	71.1
12	92.8	80.2	66.7	64.7	50.0	60.8	61.2	46.7
18	88.1	77.1	61.9	56.9	38.4	54.1	48.0	40.0
24	83.6	71.9	56.0	44.1	32.6	40.5	44.9	37.8
30	80.8	64.6	52.4	38.2	26.7	35.1	39.8	
36	75.9	58.3	48.8	29.4	24.4	32.4		
42	61.0	41.7	41.7	25.5	20.9			
48	59.5	40.6	41.7	21.6				
54	56.3	36.5	33.3					

(*) V = Voluntary leaver ; I = Involuntary Leaver.

of 19.8%. However, only 8 of this group leave in the next year and it is clear that quitting falls rapidly as short service employees survive their first 2 or 3 years and become assimilated as core workers. A similar behaviour is exhibited among starters; at least one third leave within the first year and, while the average across all cohorts is 41.7%, this proportion can actually exceed 50%. Much of this high turnover in the first year is voluntary quitting, but involuntary leaving is also important. During the first year of employment it seems as if both the company and its new employees are operating on a "trial and error" basis; workers will leave the company voluntarily if they dislike their job, and the company will dismiss workers they feel are unsuitable because of absenteeism, bad workmanship and poor timekeeping. Once again we see that quitting among starters falls after the first year and begins to level out in the third and fourth years. We also see from the involuntary quitting in months 37-42 that the redundancies at the end of 1979 affected all groups of male workers in the company, including the core.

Table 11.12 shows that 10% of females in the core group leave the company in the first 12 months (5.9% voluntarily and 4.1% involuntarily) and another 5% in the next twelve months (4.1% voluntarily and 0.9% involuntarily). Thus, while the female core quit rate in the first year was above that for males, it fell below it in the second year. The quit rate for females with an average of one year's service is 22.5%, but the majority of these leave in the first 6 months. Female starters have a first year quit rate of between 24.4% and 45.7%, with the average over the six cohorts being 36.1%. Female starters, on average, show slightly more stability than their

Table 11.12: Female Wastage (*) For Stock at 1st July 1976 and Six Monthly Cohorts of Starters

	← Stock →		Starters in Six Monthly Periods					
Start Date	Before July 74	July 74 -June 76	1-6	7-12	13-18	19-24	25-30	31-36
Cohort	220	40	41	52	41	35	28	19
1- 6 V	6	8	3					
I	3	0	0					
7-12 V	7	1	5	5				
I	6	0	2	2				
13-18 V	7	6	1	10	4			
I	1	0	0	1	0			
19-24 V	2	4	6	6	6	7		
I	1	0	0	0	4	2		
25-30 V	2	2	0	3	7	5	4	
I	5	1	0	0	0	2	0	
31-36 V	5	3	1	2	2	2	5	1
I	5	0	0	1	1	1	1	1
37-42 V	5	2	5	1	1	1	2	4
I	48	1	4	2	1	1	2	2
43-48 V	1	0	0	1	2	1	1	3
I	4	0	0	0	1	0	0	1
49-54 V	2	1	0	1	0	0	2	2
I	10	0	1	1	0	1	1	0
% remaining after:								
6 months	95.9	80.0	92.7	86.5	90.2	74.3	85.7	89.5
12	90.0	77.5	75.6	65.4	65.9	54.3	64.3	57.9
18	86.4	62.5	73.2	53.8	48.8	45.7	50.0	36.8
24	85.0	52.5	58.5	48.1	41.5	40.0	46.4	26.3
30	81.8	45.0	58.5	42.3	36.6	37.1	35.7	
36	77.3	37.5	56.1	36.5	29.3	34.3		
42	53.2	30.0	34.4	34.6	29.3			
48	50.9	30.0	34.1	30.8				
54	45.4	27.5	31.7					

(*) V = Voluntary leaver ; I = Involuntary Leaver.

male counterparts. However, it is noticeable that the majority of female quitting during the first year is for voluntary reasons.

The five year analysis of Company A thus provides valuable insights into labour market activity within the company which add to those obtained from the one year study. Clearly, there is a great advantage to be had from studing a factory/organisation over a period of several years. Some of the important conclusions to emerge here include:

(a) Voluntary quitting can halve in two years. Ranking occupations by sex and the level of voluntary quitting shows that voluntary quitting is not constant.

(b) The sizeable difference between quitting among core workers and starters that was noted in earlier chapters is confirmed here.

(c) The internal labour market was never large, but was proportionately more significant as a source of manpower change when the company was forced to cut back on external recruitment.

(d) Before the declaration of large numbers of redundancies in 1979, female workers were relatively more stable than males. A major group of females (non-craft production workers) had an average quit rate over the five years that was comparable with the extent of quitting among managerial, professional and technical personnel. The only exception here is for male and female stock workers with an average of one year's service.

(e) Despite their relative stability, female non-craft production workers are almost completely excluded from the factory labour market.

Chapter 12 Conclusions

This thesis has attempted to assess the extent of labour turnover in British manufacturing. We have seen how turnover can vary over time and how a number of different factors can influence quitting. Rising unemployment in the late 1970s and the early 1980s have had an impact, particularly on voluntary quit rates, but the reduction has not been as great as one might have expected. Consequently, the rate of leaving jobs in the manufacturing sector is still high. We know from our cross-sectional study that quitting is higher among females than males and that length of service is perhaps the most crucial determinant in the labour turnover process. This notion was confirmed when we considered the labour market situation in three diverse manufacturing companies. Here, we found that low service employees (those with 0-2 years' service) had a greater propensity to quit than longer serving employees. It was also noticeable that workers in some occupations exhibited higher rates of instability than those in other occupations.

However, our study has not just been confined to measuring labour turnover. An attempt has been made to understand the turnover process itself. To this end we have examined the concept of the dual labour market and stressed the importance of internal labour markets. A number of dual labour market theorists, including Doeringer and Piore (1971), believe that firms with well-developed internal labour markets enjoy comparatively low rates of turnover, especially among key personnel drawn from primary sector workers. Attempting to assess the validity of their claims we have extended our analysis of the

labour market situation in three companies to study the extent and importance of internal labour market mobility. Thus far however, we have only considered each company in isolation. It is our intention in this chapter to bring together some of the threads implicit in the preceding analysis and present an overview of the labour turnover situation prevailing in British manufacturing in general and our three companies in particular.

Having run a series of linear regressions on the extent of quitting in all manufacturing (males and females separately) over time (Chapter 5) we noticed that quitting among core workers has increased since the late 1960s, while that of low service employees has fallen. Taking core workers first, we saw how male quitting has increased by about 30% over the period and how female rates have risen by more than 50%. It must be said here however that much of this was probably due to an increase in involuntary turnover, particularly redundancies, lay-offs and early retirements. Contrast this with new recruits who have undergone a dramatic fall in their quitting behaviour. Here, while 6 out of every 10 male workers in 1968 used to quit their jobs in their first year, only 2 in 10 did so by 1980. Quit rates among female low service employees have declined, but not as dramatically as those for males. In particular, the quit rate during the first year of female employment of 55% in 1968 had been reduced by one third by 1980. There is clear evidence in the time-series analysis that there are two different groups of workers operating in the labour market: a core group and a low service group. It looks as if involuntary quitting among core workers has increased at a faster rate than voluntary quitting has decreased.

The low levels of recruitment consistent with economic depression and rising unemployment have served to reduce the rate of involuntary quitting among low service employees; at the same time, voluntary quit rates here have fallen as new recruits come to realise the value of employment in a period of recession.

Chapter 7 contains a cross-section analysis of quit rates for MLHs in 1968. Again, length of service emerges as a key determinant of the level of quitting. It is encouraging to note that the quit rate among new recruits is broadly similar to that obtained from the time-series analysis. The cross-section results suggest that the quit rate in the first year of employment is some three to four times greater than that for core workers. One important aspect of the cross-section study is its confirmation that short service employees, those with between 1 and 2 years service, have a quit rate which is lower than that for new recruits and significantly greater than the one experienced by core workers. Other important determinants include the level of growth in both wages and employment. Rather surprisingly however, occupational type was not a critical factor in leading to variations in quitting between MLHs. The analysis used a four-fold sub-division of the labour force and showed only small differences between the various male occupational quit rates. However, it is interesting to note that semi-skilled workers had a higher than average propensity to quit while the reverse was true for unskilled manual workers. Yet, that said, it is also important to recognise that significant differences in labour turnover are likely to occur within each broad occupational group, especially the non-manual category.

Turning to our three company studies, we can assess the relative market stability in each company by using the measures of labour turnover described earlier in Chapter 4.3. Two in particular stand out. First, by using each company's cumulative length of service curve (males and females separately) we can get a graphical representation of their relative stability. Secondly, by calculating their respective labour stability indices (the proportion of the stock of labour still employed after 12 months) we can get a quantative estimation with which to compare their relative stability. The general feeling here is that both measures are important, particularly when comparisons of the labour market situation in different companies are being made.

It is clear from the cumulative length of service curves in Figure 12.1 that male workers in Company D are far more stable than those in Companies A and E, and that the latter company has the least stable male labour force; more than half Company D's male workforce have at least 13 years' service, and a quarter have more than 25 years'. This compares with lengths of service of 7 and 15 years' respectively for male workers in Company A, and 6 and 13 years' for those in Company E.

The situation regarding female workers however is not so clear-cut as the three cumulative length of service curves in Figure 12.2 are all intersecting. There is no doubt that low service females in Company E display the greatest rates of instability. One-fifth of women here have no more than 6 months' service while 30% have no more than one year's. We also see that there is little difference in the

Figure 12.1 Cumulative Length of Service Curves, Male Workers

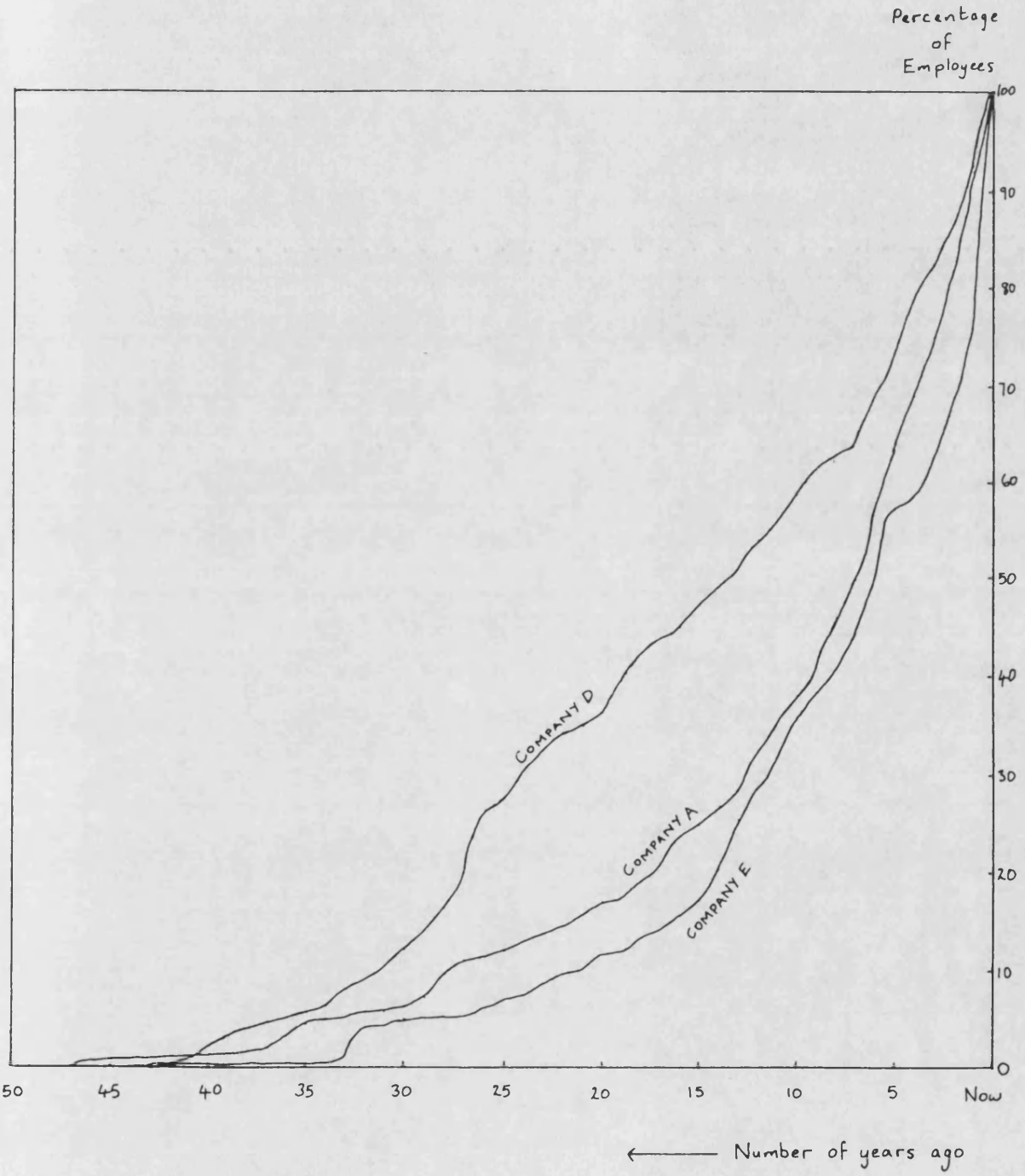
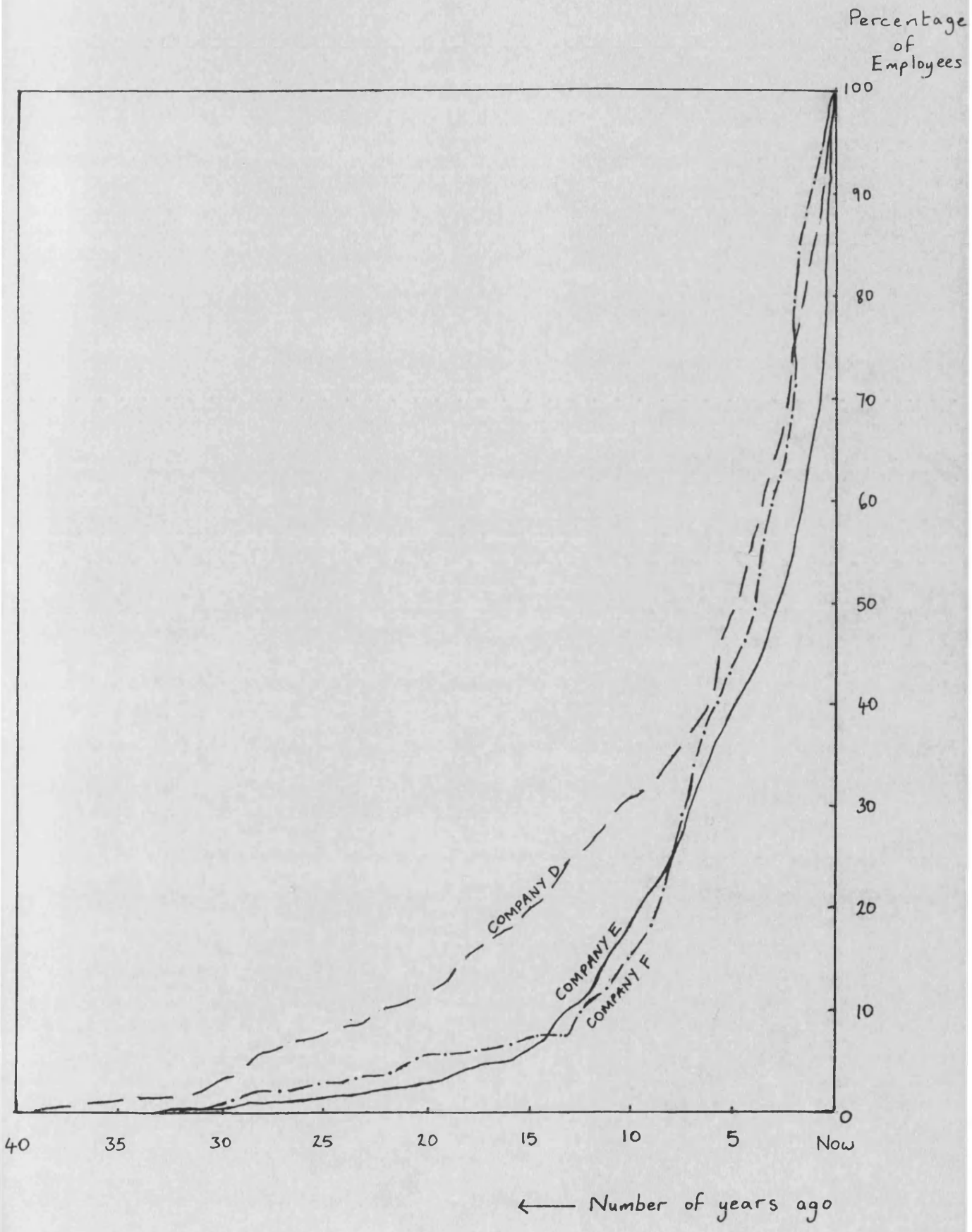


Figure 12.2 Cumulative Length of Service Curves, Female Workers



proportion of workers in each company with 6 or more years' service. In all three cases this was close to 40%. Finally, there is no doubt that female workers in Company D exhibit the greatest overall labour stability.

This general picture is confirmed when we compare the stability rates for male and female workers workers in each company. We see from Table 12.1 that Company D enjoys considerable labour market stability; more than 94% of its stock of male workers at the beginning of 1980 were still there at the end of the year. Nearly 89% of females were similarly affected. Indeed, such is the extent of Company D's overall labour stability that female workers here are more stable than male workers in the other two companies. Yet, that said, it is important to point out that in all three companies male workers are more stable than female workers, the difference being particularly pronounced in Company E.

This last observation suggests that female workers have higher quit rates than male workers. In fact, almost without

Table 12.1 Stability Indices in the Three Companies (Males and Females separately)

	Males			Females		
Co.	Begin.	End	S.I. (%)	Begin.	End	S.I. (%)
E	367	312	85.0	877	579	66.0
D	2819	2653	94.1	385	342	88.8
A	603	511	84.7	286	237	82.9

Key: Begin. = Beginning of period
End = End of period
S.I. = Stabilty index

exception, this has proved to be a recurring feature of our analysis. Both in the time-series and cross-sectional studies, female workers display much higher quit rates than males, sometimes as much as 80%. The difference is even more pronounced in our three case studies where the figure exceeds 100% in some occupations. However, while such comparisons are useful insofar as they provide a general impression of the situation, more meaningful comparisons can only be made when quit rates are broken down by occupation and reason for leaving. This we do in Table 12.2 where we present voluntary quit rates for a number of different occupations.

This table shows that there is a massive difference in the quitting behaviour between the same occupations in the three companies. In particular, the extent of voluntary quitting among workers in Company D is lower for each occupation when compared to those in the other two companies. We note that in Companies E and A there is a tendency for manual workers to quit more frequently than non-manual workers and, within the manual category, for unskilled and semi-skilled workers to quit more than skilled workers. This relationship does not appear to hold in Company D however where voluntary quitting among manual workers is below that for the company as a whole and where other manual workers exhibit greater stability than both craftsmen and non-craft production workers. The findings for Company D then are interesting because they appear to support the conclusion reached in Chapter 7.2, namely that male unskilled workers do not appear to quit as often as other male manual workers. With female workers in Company D accounting for less than 3% of the total manual workforce, the evidence is even more convincing. However, an

Table 12.2 Voluntary Quit Rates in all Three Companies

Occupation	Company E (1)	D (2)	A (3)
Managers	15.4	0.0	8.1
Professional & related		7.2	10.8
Engineers, scientists, etc.	5.7	0.9	7.2
Technicians, draughtsmen	29.3	2.7	11.6
Office workers: male		2.5	
Office workers: female	33.8	8.4	20.7
Office supervisors	9.0	0.9	6.2
Foremen	13.8	0.0	2.8
Craftsmen	11.2	2.5	10.7
Semi-skilled machinists			15.3
Other non-craft production: male	83.3	2.6	14.2
Other non-craft production: female			9.0
Other manual	42.4	1.6	13.2
Total	54.1	2.8	12.9

Notes: (1) Annualised rate based on the four months March-June 1980. See Table 8.16.
(2) For 1980. See Table 9.15.
(3) Average for 1976-80. See Table 11.7.

important factor in Company D is that other manual workers do have access to the internal labour market. Turning to clerical workers, quitting here can be seen to be high in all three companies, exceeding the company average in two of them.

It was also noticeable how voluntary quitting responded to the economic conditions within a company. There is no doubt that the redundancies announced in Companies E and A only served to reduce labour turnover. Voluntary quitting in Company E for example was markedly lower after the twilight lay-off (an annualised rate of 12.6% compared to one of 54.1%). The redundancies announced in

Company A, especially in 1979 and 1980, also served to reduce voluntary quitting so that it was much lower in 1980 (7.8%) than 1978 (18.3%).

The company case studies provide further confirmation that quitting is much higher among new recruits and workers with low lengths of service than among the more established or core workers. The five year study in Company A also shows how new workers become assimilated as core workers. Here, we witnessed a rapid falling off in the quit rates of those workers surviving their first year. All our evidence suggests that companies with a high proportion of recruits usually experience high levels of turnover. Indeed, it seems legitimate to talk of a vicious circle of turnover; a high proportion of starters tend to promote higher turnover which in turn increases the number of new workers recruited to the firm and so on.

Earlier in this thesis we reviewed a number of different dual labour market models, ranging from Kerr's structured-structureless model to Mok's multi-segmented one. We concluded that, while there was no one definitive model, the writings of the segmentationalist school were important because they stressed the role occupational segregation had to play in determining quit rates among other things. Here then, workers employed in occupations associated with the the primary sector tend to exhibit different behavioural traits and have different expectations to workers in secondary sector occupations. Thus, we see in Company E for example, how female non-craft production workers display the high rates of turnover typically expected of secondary sector workers. Yet, the

company accepts this as normal and does not consider it a problem.

Now, while the above is a gross over-simplification of the dualist model, there is little doubt that much of the difference between male and female quitting can be attributed to the occupational distribution of workers. As stated earlier (Chapter 2.4), this begs the question: is it the job and its various characteristics that are responsible for the high rates of turnover associated with certain occupational groups or, is it the worker and his/her various characteristics?

We know that females tend to be concentrated in jobs normally associated with high rates of turnover, e.g. clerical and semi- and unskilled manual work. Table 12.3 below illustrates this point. Here, we see that 9 out of every 10 women working in each company were employed in these three occupations. Hence, it is not surprising to observe that female quit rates in all three companies were much higher than male ones. Female workers in other occupations however appear to exhibit greater rates of labour stability. Female managers in Company E for example (admittedly a small group of only

Table 12.3 Percentage of Total Employment in Three Broad Occupations

Occupation	Males (%)			Females (%)		
	E	D	A	E	D	A
Clerical	4.6	12.6	5.8	23.5	76.6	30.8
Semi-skilled	20.2	7.8	46.9	43.3	2.3	58.0
Unskilled	27.5	9.2	12.6	25.3	9.9	7.3
Total in all 3	52.3	29.6	65.3	92.1	88.8	96.1

four workers compared with 36 male workers) have a mean length of service nearly twice that of male workers in this occupation. Even more significantly, female office supervisors in Company E (a much larger group of 18 women compared with 16 men) have longer mean lengths of service than male office supervisors (more than 40% in this case). Also noticeable is the fact that female manual workers in Company A have similar mean lengths of service to male manual workers when each group is broken down by occupation. Thus, this length of service evidence suggests that higher quitting for females is mostly due to their occupational concentration and that the differences in stability within each occupation are minimal.

We have also stressed the importance of internal labour markets in this thesis. Clearly, the extent of internal mobility is dependent on a number of factors including the importance firms place on promotion-from-within. It is also important to recognise that the extent of internal mobility is a function of the precise nature of the occupational breakdown. Our analysis recognises some ten or eleven broad occupational groups and movements within them are not considered as mobility. Clearly then, the broader the occupational breakdown, the fewer the number of internal changes that appear to be made. For example, simply splitting office workers into two categories, office supervisors and clerical workers, masks potentially important differences between a number of clerical grades. The move from, say, secretary to deputy supervisor may be significant, particularly when this is a pre-requisite for promotion to office supervisor, yet it is one our occupational classification fails to recognise.

While the one year studies in Companies E and D provided a useful insight into the workings of the internal labour market, both were limited by the short period of time in which the observations were made. Internal occupational mobility affected 1.7% of the labour force in Company D and 1.0% in Company E. Our study of Company A however did not suffer the same drawback. Here, our analysis extends over a period of five years, thus enabling us to examine the extent of internal labour mobility in some detail. In particular, it allows us to compare our findings with those of MacKay et al. (1971) (see Chapter 3.3).

Expressed as a percentage of the average number employed in a given year, internal occupational labour market activity in Company A varied between 1.8% and 3.8% p.a. during the five years, with an average level of 2.9%. This annual average is the same for both manual and non-manual workers. The average annual figures for manual workers in the MacKay et al. study ranged from 1.5% among engineering firms in Glasgow to 3.5% among those in New Town. The four-fold occupational classification in MacKay et al. is broadly the same as that used in our study (they use one broad non-manual grouping), and it is of interest that both studies show remarkably similar rates of internal occupational mobility.

Our findings also seem to indicate greater <u>internal</u> occupational mobility than was found in the Harris (1966) study where the <u>overall</u> rate of occupational mobility (i.e. not just internal mobility) between 1953-63 was roughly 24%. However, it must be remembered that Harris' study was based on a seven-fold

occupational classification.

Internal occupational mobility clearly affects a small minority of workers in any one year. However, our concept of the internal labour market was wider than this and included movements between seven broad functional areas within the factory, keeping the same occupation, and for any inter-factory movements while with the same organisation. These two additional dimensions are viewed as labour market activity which usually involves the employee responding to internal vacancy notices. Company E has no associated factories from which it can draw, or supply, labour. Internal labour market activity was confined to 1.5% of the labour force and accounted for 3.2% of all significant changes within the factory. These findings contrast with those for Company D. Here, the factory labour market was as important as inter-factory movements, each accounting for about 60 significant changes. The organisation-wide labour market affected 3.6% of the labour force in Company D and accounted for some 29% of significant changes within the factory.

The organisation-wide labour market accounted for just over one-fifth of all significant changes in Company A in the five years 1976-80 and, on average, such changes affected 4.7% of the labour force each year. However, internal labour market activity was relatively more important in 1979 and 1980 when it accounted for one-third of all significant appointments made in the factory. It is no coincidence that 1979-80 was a period of retrenchment for the company. Both years ended with the announcement of large scale redundancies. Clearly then, at a time when it was cutting back on its

labour force, the firm had to rely on the company labour market to replace workers leaving through natural wastage and voluntary quitting.

It was also interesting to note that the internal labour market in Company A was particularly well-developed for non-manual workers. With the exception of office workers, nearly half the changes taking place during 1976-80 were due to internal transfers. By comparison, the company labour market accounted for only 1 in 6 of the job and/or functional changes made by manual workers.

An internal labour market of some sort appears to exist in all three companies although, as expected, we found considerable variation in its importance. Significant internal changes in Company E affected only 1.5% of the labour force and the internal labour market was of limited relevance. Companies A and D provide a marked contrast with internal changes affecting between 3.6% and 5.0% of the labour force in one year. Significant changes will have involved 18-25% of the labour force in only five years and the internal labour market, as widely defined, is clearly of considerable importance. It is also clear that inter-factory transfers represent an important degree of extra flexibility for Companies A and D. They are able to react to changing market conditions by expanding or contracting employment within different factories in the same organisation.

BIBLIOGRAPHY

Acton Society Trust (1953) Size and Morale, Part 1, London, The Trust.

Acton Society Trust (1957) Size and Morale, Part 2, London, The Trust.

Alexander, A.J. (1974) 'Income, Experience and the Structure of Internal Labour Markets', Quarterly Journal of Economics, Vol. 88, pp.63-85.

Alexander, M.W. (1915a) 'Cost of Hiring and Firing Men', Engineering Magazine, Vol 48, pp.733-76.

Alexander, M.W. (1915b) 'Waste in Hiring and Discharging Employees', Scientific American Supplement, Vol. 79, pp.102-3.

Alexander, M.W. (1916) 'Hiring and Firing: its Economic Waste and how to Avoid it', Annals of the American Academy of Political and Social Science, Vol. 65, pp.128-44.

Alexander, M.W. (1917) 'The Cost of Labour Turnover' U.S. Bureau of Labour Statistics Bulletin, No. 227, pp.13-27.

Anderson, B.W. (1974) 'Empirical Generalisations on Labour Turnover', in Pegnetter, R. (ed.) (1974) Labour and Manpower, Iowa, University of Iowa, Research Series IV, pp.33-59.

Argyle, M., Gardner, G. and Cioffi, I. (1958) 'Supervisory Methods Related to Productivity, Absenteeism and Labour Turnover', Human Relations, Vol. 11, pp.23-40.

Armknecht, P.A. and Early, J.F. (1972) 'Quits in Manufacturing: a Study of their Causes', Monthly Labour Review, Vol 95, pp.31-37.

Armknecht, P.A. and Early, J.F. (1973) 'Manufacturing Quit Rates Revisited: Secular Changes and Women's Quits', Monthly Labour Review, Vol. 96, pp.56-58.

Averitt, R.T. (1968) The Dual Economy, New York, W.W. Norton.

Azumi,K. (1969) Higher Education and Business Recruitment in Japan, New York, Teachers; College Press.

Badger, A.B. (1966) Man In Employment, New York, Macmillan.

Barnes, W.F. and Jones, E.B. (1973) 'Manufacturing Quit Rates Revisited: a Cyclical View of Women's Quits', Monthly Labour Review, Vol. 96, pp.53-56.

Barnes, W.F. and Jones, E.B. (1974) 'Differences in Male and Female Quitting', Journal of Human Resources, Vol. 9, pp.439-51.

Baron, H.M. and Hymer, B. (1968) 'The Negro Worker in the Chicago Labour Market', in Jacobsen, J. (ed.) The Negro and the American Labour Movement, New York, Doubleday Anchor Books.

Becker, G. (1964) Human Capital, New York, Columbia University Press.

Behrend, H. (1953) 'Absence and Labour Turnover in a Changing Economic Climate', Occupational Psychology, Vol. 27, pp.69-79.

Behrend, H. (1955) 'Normative Factors in the Supply of Labour', Manchester School of Economic and Social Studies Bulletin, Vol. 23, pp.62-76

Berg, I. (1970) Education and Jobs: The Great Training Robbery, Manchester, Penguin.

Bergen, H.B. (1926) 'Stability of Men and Women Office Workers',

Journal of Personnel Research, Vol. 5, No. 3, pp.71-73.
Behman, S. (1968) 'Wage-Determination Process in U.S. Manufacturing' Quarterly Journal of Economics, Vol. 82, pp.117-142.
Blackburn, R.M. and Mann, M. (1979) The Working Class in the Labour Market, London, Macmillan.
Blau, F.D. (1975) 'Sex Segregation of Workers by Enterprise in Clerical Occupations', in Edwards, R.C., Reich, M. and Gordon, D.M. (eds.) (1975), pp.257-78.
Bluestone, B. (1970) 'The Tripartite Economy: Labour Markets and the Working Poor' Poverty and Human Resources, July-August, pp.15-35.
Bosanquet, N. and Doeringer, P.B. (1973) 'Is There a Dual Labour Market in Great Britain ?', Economic Journal, Vol. 83, pp.421-435.
Bowey, A.M. (1969) 'Labour Stability Curves and a Labour Stability Index', British Journal of Industrial Relations, Vol. 7, pp.71-83.
Bowey, A.M. (1971) 'A Measure of Labour Stability', Personnel Management, Vol 3, pp.26-31.
Brayfield, A.H. and Crockett, W.H. (1955) 'Employee Attitudes and Employee Performance', Psychology Bulletin, Vol. 52, No. 5, pp.396-424.
Brissenden, P.F. and Frankel, E. (1922) Labour Turnover in Industry: a Statistical Analysis, New York, Macmillan.
Buchele, R. (1981) 'Sex Discrimination and Labour Market Segmentation', in Wilkinson, F. (ed.) (1981) pp.211-27.
Buchele, R. (1983) 'Economic Dualism and Employment Stability' Industrial Relations, Vol. 22, No.3, pp.410-418.
Bucklow, M. (1963) 'Labour Turnover - A Reassement', Journal of Industrial Relations, Vol. 5, pp.29-37.
Burton, J.F. and Parker, J.E. (1969) 'Inter-Industry Variations in Voluntary Labour Mobility', Industrial and Labour Relations Review, Vol. 22, pp.199-216.
Butler, R. (1975) The Changing Structure of the Labour Force, The Unit for Manpower Studies, The Department of Employment.
Byrt, W.J. (1957) 'Methods of Measuring Labour Turnover', Personnel Practice Bulletin, Vol. 13, pp.6-14.

Cairnes, J.E. (1874) Political Economy, New York, Harper.
Caplow, T. (1954) Sociology of Work, New York, McGraw-Hill.
Chiplin, B. and Sloane, P.J. (1976a) Sex Discrimination in the Labour Market, London, Macmillan.
Chiplin, B. and Sloane, P.J. (1976b) 'Personal Characteristics and Sex Differences in Professional Employment', Economic Journal, Vol. 86, pp.729-745.
Cleland, S. (1955) The Influence of Plant Size On Industrial Relations, Princeton, Princeton University Press.
Cleland, C. and Peck, R. (1959) 'Psychological Determinants of Tenure in Institutional Personnel', American Journal of Mental Deficiency, Vol. 64, pp.876-888.
Clowes, G.A. (1972) 'A Dynamic Model for the Analysis of Labour Turnover', Journal of the Royal Statistical Society, Series A, Vol. 135, Part 2, pp.242-56.

Cook, P.H. (1951) 'Labour Turnover Research', Journal of the Institute of Personnel Management, Vol. 33, pp.2-10.
Coventry and District Engineering Employers Federation (1972) Labour Relations and Employment in the E.E.C., Coventry, C.D.E.E.F.
Curran, M.M. (1981) 'Inter-Industry Variations in Male Labour Turnover', British Journal of Industrial Relations, Vol. 19, pp.201-10.

Dalton, D.R. and Todor, W.D. (1979) 'Turnover Turned Over: an Expanded and Positive Perspective', Academy of Management Review, Vol. 4, No. 2, pp.225-35.
Dewey, D. (1960) 'Labour Turnover as an Index of Unemployment in the U.S.A., 1919-1958', Journal of Industrial Economy, Vol. 8, pp.265-87.
Dickens, W.T. and Lang, K. (1985) 'A Test of Dual Labour Market Theory', American Economic Review, Vol. 75, No. 4, pp.792-805.
Doeringer, P.B. et al. (1969) Urban Manpower and Low-Income Labour Markets: a Critical Assessment, Washington D.C., U.S. Department of Labour.
Doeringer, P.B. and Piore, M.J. (1971) Internal Labour Markets and Manpower Analysis, Lexington, D.C. Heath.
Douglas, P.H. (1918) 'The Problem of Labour Turnover', American Economic Review, Vol. 8, No. 2, pp.306-16.
Duncan, D.C. (1955) 'A New Method of Recording Labour Losses', The Manager, Vol. 23, pp.30-5 and 61.

Edwards, R.C. (1975) 'The Social Relations of Production in the Firm and Labour Market Structure', in Edwards, R.C. et al. (eds.) (1975), pp.3-26.
Edwards, R.C. (1979) Contested Terrain, New York, Basic Books.
Edwards, R.C., Reich, M. and Gordon, D.M. (eds.) (1975) Labour Market Segmentation, Lexington, D.C. Heath.

Farris, G.F. (1971) 'A Predictive Study of Turnover', Personnel Psychology, Vol. 24, pp.311-328.
Feiss, R.A. (1915) 'Scientific Management Applied to the Steadying of Employment, and its Effect in an Industrial Establishment, Philadelphia 1915', Annals of the American Academy of Political and Social Science, No. 61, pp.103-11.
Fischer, B. (1916) 'Methods of Reducing Labour Turnover', Annals of the American Academy of Political and Social Science, No. 65, pp.144-54.
Fleishman, E.A. and Berniger, J. (1960) 'One Way to Reduce Office Turnover', Personnel, Vol. 37, pp.63-69.
Fleishman, E.A. and Harris, E.F. (1962) 'Patterns of Leadership Behaviour Related to Employee Grievances and Turnover', Personnel Psychology, Vol. 15, pp.43-56.
Ford, J., Keil, T., Bryman, A., Beardsworth, A. and Jenkins, R. (1984) 'Internal Labour Market Processes', Industrial Relations Journal, Vol. 15, No. 2, 1984, pp.41-50.
Fry, F.L. (1973) 'A Behavioural Analysis Of Economic Variables

Affecting Turnover', Journal of Behaviour Economics, Vol. 2, 1973, pp.247-95.
Fuchs, V.R. (1971) 'Differences in Hourly Earnings Between Men and Women', Monthly Labour Review, Vol. 94, pp.9-15.

Gaudet, F.J. (1960) Labour Turnover: Calculation and Cost, New York, American Management Assoiciation, Research Study No. 39.
Goodman, P.S., Salipante, P. and Paransky, H. (1973) 'Hiring, Training and Retraining the Hard-Core Unemployed: a Selected Review', Journal of Applied Psychology, Vol. 58, No. 1, pp.23-33.
Gordon, D.M. (1972a) Theories of Poverty and Underemployment, Lexington, D.C. Heath.
Gordon, D.M. (1972b) 'From Steam Whistles to Coffee Breaks', Dissent, Winter, pp.197-210.
Gordon, D.M., Edwards, R. and Reich, M. (1982) Segmented Work, Divided Workers: the Historical Transformation of Labour in the United States, Cambridge University Press, Cambridge Massachusetts.
Gouldner, A.W. (1957-58) 'Cosmopolitans and Locals: Toward an Analysis of Latent Social Roles - Part I', Administrative Science Quarterly, Vol. II, pp.281-306.
Gouldner, A.W. (1957-58) 'Cosmopolitans and Locals: Toward an Analysis of Latent Social Roles - Part II', Administrative Science Quarterly, Vol. II, pp.444-80.
Greystoke, J.R., Thomason, G.F. and Murphy, T.J. (1952) 'Labour Turnover Surveys', Journal of the Institute of Personnel Management, Vol. XXXIV, pp.158-65.
Guest, R.H. (1955) 'A Neglected Factor in Labour Turnover', Occupational Psychology, Vol. 29, pp.217-31.

Hakkinen, S. and Toivainen, Y. (1960) 'Psychological Factors Causing Labour Turnover Among Underground Workers', Occupational Psychology, Vol. 34, pp.15-30.
Hall, R.E. (1974) Comments and Disscussion on a Paper by Wachter, M.L. (1974), Brookings Papers on Economic Activity, 3:1974, pp.688-90.
Harris, A.I. (1966) Labour Mobility in Great Britain, 1953-63, Ministry of Labour and National Service.
Harris, M. (1964) 'The Social Aspects of Labour Turnover in the U.S.S.R.', British Journal of Industrial Relations, Vol. 2, pp.398-417.
Hedberg, M. (1961) 'The Turnover of Labour in Industry, an Acturial Study', Acta Sociologica, Vol. 5, pp.129-143.
Hedberg, M. (1967) The Process of Labour Turnover, Stockholm, Swedish Council for Personnel Administration, Report No. 52.
Hellriegel, D. and White, G.E. (1973) 'Turnover of Professionals in Public Accounting: a Comparative Analysis', Personnel Psychology, Vol. 26, pp.239-49.
Hepple, B. (1968) Race, Jobs and the Law in Britain, Penguin Books, Middlesex.
Herbst, P.G. (1963) 'Organisational Commitment: a Decision Process

Model', Acta Sociologica, Vol. 7, pp.34-45.
Hill, J.M.M. (1972) The Seafaring Career: Study of the Forces Affecting Joining, Serving and Leaving the Merchant Navy, London, Tavistock Institute of Human Relations, Centre for Applied Social Research.
Hulin, C.L. (1968) 'Effects of Changes in Job Satisfaction Levels on Employee Turnover', Journal of Applied Psychology, Vol. 52, No. 2, pp.122-26.
Hulin, C.L. and Blood, M.R. (1968) 'Job Enlargement, Individual Differences, and Workers Responses', Psychological Bulletin, Vol. 69, No. 1, pp.41-55. Referred to in Mobley, W.H. (1982).
Hyman, R. (1970) 'Economic Motivation and Labour Stability', British Journal of Industrial Relations, Vol. 8, pp.159-78.

Indik, B.P. (1963) 'Some Effects of Organisation Size on Members Attitudes and Behaviour', Human Relations, Vol. 16, pp.369-84.
Indik, B.P. (1965) 'Organisation Size and Member Participation', Human Relations, Vol. 18, pp.339-50.
Indik, B. and Seashore, S. (1961) Effects of Organisation Size on Member Attitudes and Behaviour, University of Michigan, Survey Research Centre of the Institute for Social Research.
Ingham, G.K. (1967) 'Organisation Size, Orientation to Work and Industrial Behaviour', Sociology, Vol. 1, No. 3, pp.239-58.
Ingham, G.K. (1970) Size of Industrial Organisation and Worker Behaviour, Cambridge, Cambridge University Press.

Jain, H.C. and Sloane, P.J. (1980) 'The Structure of Labour Markets, Minority Workers and Equal Employment Opportunity Legislation', International Journal of Social Economics, Vol. 7, pp.95-121.
Jolly, J., Creigh, S. and Mingay, A. (1980) Age as a Factor in Employment, Department of Employment, Research Paper No. 11.
Jones, K. and Smith A.D. (1970) The Economic Impact of Commonwealth Immigration, Cambridge, Cambridge University Press.

Katzell, M.E. (1968) 'Expectations and Dropouts in Schools of Nursing', Journal of Applied Psychology, Vol. 52, No. 2, pp.154-157.
Katzell, R.A., Korman, A.K. and Levine, E.L. (1971) Overview Study of the Dynamics of Worker Job Mobility, Washington D.C., Social and Rehabilitation Service, U.S. Department of HEW.
Kerr, C. (1954) 'The Balkanisation of Labour Markets', in Bakke, E.W. (ed.) Labour Mobility and Economic Opportunity (1954), London, Chapman and Hall, pp.92-110.
Kerr, W.A. (1947) 'Labour Turnover and its Correlates', Journal of Applied Psychology, Vol. 31, pp.366-71.
Kerr, W.A., Koppelmeier, G.J. and Sullivan, J.J. (1951) 'Absenteeism, Turnover and Morale in a Metals Fabrication Factory', Occupational Psychology, Vol. 25, pp.50-55.
Kimball, D.S. and Kimball Jr., D.S. (1947) Principles of Industrial Organisation, New York, McGraw-Hill.
Kitson, H.D. (1925) The Psychology of Vocational Adjustment,

Philadelphia, J.B. Lippincott.
Knowles, M.C. (1964a) 'Personal and Job Factors Affecting Labour Turnover', Personnel Practice Bulletin, Vol. 20, pp.13-18.
Knowles, M.C. (1964b) 'A Review of Labour Turnover Research', Personnel Practice Bulletin, Vol. 20, pp.25-37.
Knowles, M.C. (1965) 'The Impact of Management Decisions on Labour Turnover', Personnel Practice Bulletin, Vol. 21, pp. 42-48.

Ley, R. (1966) 'Labour Turnover as a Function of Worker Differences, Work Environment and Authoritarianism of Foremen', Journal of Applied Psychology, Vol. 50, pp.497-500.
Lefkowitz, J. (1971) 'Personnel Turnover', in Abt, L.E. and Reiss, B.F. (eds.) (1971) Progress in Clinical Psychology. Vol. 9: Clinical Psychology in Industrial Management and Organisation, New York, Grine and Stratton, pp.69-90.
Lefkowitz, J. and Katz, M. (1969) 'Validity of Exit Interviews', Personnel Psychology, Vol. 22, pp.445-55.
Leigh, D.E. (1976) 'Occupational Advancement in the Late 1960s: an Indirect Test of the Dual Labour Market Hypothesis', Journal of Human Resources, Vol. 11, No. 2, pp.155-71.
Long, J.R. (1951) Labour Turnover Under Full Employment, University of Birmingham, Birmingham Research Board, Faculty of Commerce and Social Science.
Loveridge, R. and Mok, A.L. (1979) Theories of Labour Market Segmentation, The Hague, Martinus Nijhoff, Social Sciences Division.
Lutz, B. and Sengenberger, W. (1974) Arbeitsmarktstrukturen und offentliche Arbeitsmarkpolitik (Labour Market Structures and Public Labour Market Policy), Gottingen: Verlag O. Schwartz. Referred to in Loveridge, R. and Mok, A.L. (1979).

Mace, J.D. (1979) 'Internal Labour Markets for Engineers in British Industry', British Journal of Industrial Relations, Vol. 17-18, No. 1, pp.50-63.
Mace, J.D. and Wilkinson, G.C.G. (1977) 'Are Labour Markets Competitive ? A Case Study of Engineers', British Journal of Industrial Relations Vol. XV, No. 1, pp.1-17.
MacKay, D.I., Boddy, D., Brack, J., Diack, J.A. and Jones, N. (1971) Labour Markets Under Different Employment Conditiions, London, George Allen and Unwin.
MacKay, D.I., Elliot, R.F. and Falick, J.L. (1976) Redundancy, Job Creation and Job Research, Unpublished Paper. Referred to in Curran, M.M. (1981).
Main, B.G.M. (1982) 'The Length of a Job in Great Britain', Economica, Vol. 49, pp.325-33.
Mandell, M. (1956) Recruiting and Selecting Office Employees, New York, American Management Association.
March, J.G. and Simon, H.A. (1958) Organisations, New York, John Wiley and Sons.
Mayhew, K. and Rosewell, B. (1979) 'Labour Market Segmentation in Britain', Oxford Bulletin of Economics and Statistics, Vol. 41, No. 2, pp.81-115.

Mayhew, K. and Rosewell, B. (1981) 'Occupational Mobility in Britain', Oxford Bulletin of Economics and Statistics, Vol. 43, No. 3, pp.225-55.

McCreadie, J.J. and Phelan, B.K. (1947) 'A Study of Labour Turnover', Bulletin of Industrial Psychology and Personnel Practice, Vol. 3, pp.12-17.

McNally, G.B. (1968) 'Patterns of Female Labour Force Activity', Industrial Relations, Vol. 7, pp.204-218.

Medoff, J.L. (1979) 'Lay-offs and Alternatives under Trade Unions in U.S. Manufacturing', American Economic Review, June, Vol. 69, No. 3, pp.380-95. Referred to in Shorey, J. (1980).

Merton, R.K. (1957) Social Theory and Social Structure, Glencoe, Free Press.

Metcalf, D. (1981) Low Pay, Occupational Mobility and Minimum Wage Policy in Britain, Washington, American Enterprise Institute for Public Research.

Metcalf, D. and Nickell, S. (1982) 'Occupational Mobility in Great Britain', in Ehrenberg, R.G. (ed.) (1982) Research in Labour Economics, Vol. 5, Greenwich Conneticut, J.A.I. Press, pp.319-57.

Meyer, H. and Cuomo, S. (1962) Who Leaves? A Study of Background Characteristics of Engineers Associated with Turnover, Crotonville New York, General Electric Company, Behavioural Science Research.

Michon, F. (1981) 'Dualism and the French Labour Market' in Wilkinson, F. (ed.) (1981), pp.81-97.

Minor, F.J. (1958) 'The Prediction of Turnover of Clerical Employees', Personnel Psychology, Vol. 11, pp.393-402.

Mobley, W.H. (1982) Employee Turnover: Causes, Consequences, and Control, Reading Massachusetts, Addison-Wesley.

Mobley W.H., Griffeth, R.W., Hand, H.H. and Meglino, B.M. (1979) 'Review and Conceptual Analysis of the Employee Turnover Process', Psychological Bulletin, Vol. 86, No. 3, pp.493-522.

Moffatt, G. and Hill, K. (1970) 'Labour Turnover in Australia - a Review of Research, Part 1', Personnel Practice Bulletin, Vol. 26, No. 3, pp.142-49.

Mok, A.L. (1975) 'Is er een dubbele arbeidsmarkt in Nederland ?' ('Is There a Dual Labour Market in the Netherlands ?') in Werkloosheid, Aard, Omvang, Structurele Oorzaken En Beleidsalternatieven, Pre-Adviesen Van De Verniging Voore De Staathuishoudkunde, Martinus Nijhoff, The Hague. Referred to in Loveridge, R. and Mok. A.L. (1979).

Muchinsky, P.M. and Tuttle, M.L. (1979) 'Employee Turnvover: an Empirical and Methodological Assessment', Journal of Vocational Behaviour, Vol. 14, No. 1, pp.43-77.

National Economic Development Office (1967) Labour Turnover Occassional Paper No. 1, London, Economic Development Committee for the Clothing Industry.

Oatey, M. (1970) 'The Economics of Training With Respect to the Firm', British Journal of Industrial Relations, Vol. 8, pp.1-

21.
Oi, W. (1962) 'Labour as a Quasi-Fixed Factor', Journal of Political Economy, Vol. 70, No. 6, pp.538-55.
Okun, A.M. (1973) 'Upward Mobility in a High-Pressure Economy', Brookings Papers on Economic Activity, 1:1973, pp.207-52. Referred to in Wachter, M.L. (1974).
Oppenheimer, V.K. (1968) 'The Sex-Labelling of Jobs', Industrial Relations, Vol. 7, pp.219-34.
Organisation for Economic Co-operation and Development (1965) Wages and Labour Mobility, Paris, OECD.
Osterman, P. (1975) 'An Empirical Study of Labour Market Segmentation', Industrial and Labour Relations Review, Vol. 28, pp.508-23.
Owen, N (1983) Economies of Scale, Competitiveness and Trade Patterns Within The European Community, Oxford, Oxford University Press.

Palmer, D.L., Purpus, E.R. and Stockford, L.O. (1944) 'Why Workers Quit', Personnel Journal, Vol. 23, pp.111-19.
Palmer, G.L., Parnes, H.S. and Wilcock, R.C. (1962) 'Attachments to Occupation and to Company',in G.L. Palmer et al. The Reluctant Job Changer, Philadelphia, University of Pennsylvania Press, pp.7-44.
Parnes, H.S. (1954) Research on Labour Mobility, New York, Social Science Research Council.
Parnes, H.S. (1964) 'Labour Force Mobility' in Lectures and Methodological Essays on Educational Planning, Paris, Directorate for Scientific Affairs, O.E.C.D.
Parsons, D.O. (1972) 'Specific Human Capital: an Application to Quit Rates and Lay-Off Rates', Journal of Political Economy, Vol. 82, No. 6, pp.1120-43.
Parsons, D.O. (1977) 'Models of Labour Market Turnover: a Theoretical and Empirical Survey', in Ehrenberg, R.G. (ed.) Research in Labour Economics, Vol. 1, Greenwich Conneticut, J.A.I. Press, pp.185-223.
Pencavel, J.H. (1970) An Analysis of the Quit Rate in American Manufacturing Industry, Princeton, Industrial Relations Section, Department of Economics, Princeton University.
Pettman, B.O. (1973) 'Some Factors Influencing Labour Turnover: a Review of Research Literature', Industrial Relations Journal, Vol. 4, pp.43-61.
Pettman, B.O. (ed.) (1975) Labour Turnover and Retention, Epping Essex, Gower Press.
Piore, M.J. (1968a) 'The Impact of the Labour Market upon the Design and Selection of Productive Techniques within the Manufacturing Plant', Quarterly Journal of Economics, Vol. 82, pp.602-20.
Piore, M.J. (1968b) 'On-the-Job Training and Adjustment to Technological Change', The Journal of Human Resources, Vol. 3 (Supplement), pp.435-449.
Piore, M.J. (1969) 'On-the-Job Training in the Dual Labour Market: Public and Private Responsibilities in On-the-Job Training of Disadvantaged Workers', in Weber, A.R. et al. Public-Private Manpower Policies, Madison Wisconsin, Industrial Relations Research Association, pp.101-32.

Piore, M.J. (1970) 'Jobs and Training', in Beer, S.H. and Barringer, R.E. (eds.) The State and the Poor, Cambridge Massachusetts, Winthrop Publishers, pp.53-83.
Piore, M.J. (1975) 'Notes for a Theory of Labour Market Segmentation' in Edwards, R.C. et al. (eds.) (1975), pp.125-150.
Piore, M.J. (1980) 'Dualism as a Response to Flux and Uncertainty', in Berger, S. and Piore, M.J. (1980) Dualism and Discontinuity in Industrial Societies, Cambridge, Cambridge University Press, pp.23-54.
Porter, L.W. and Steers, R.M. (1973) 'Organisational, Work and Personal Factors in Employee Turnover and Absenteeism', Psychological Bulletin, Vol. 80, No. 2, pp.151-76.
Price, J.L. (1977) The Study of Turnover, Iowa, Iowa State University Press.

Reich, M., Gordon, D.M. and Edwards, R.C. (1973) 'A Theory of Labour Market Segmentation', American Economic Review, Vol. 63, pp.359-65.
Reynolds, L.G. (1951) The Structure of Labour Markets, New York, Harper and Brothers.
Rice, A.K., Hill, J.M.M. and Trist, E.L. (1950) 'The Representation of Labour Turnover as a Social Process (Studies in the Social Development of an Industrial Community - The Glacier Project - II)', Human Relations, Vol. 13, pp.349-72.
Richmond, A.H. (1973) Migration and Race Relations in an English City: a Study in Bristol, London, Oxford University Press.
Rose, E.J.B. et al. (1969) Colour and Citizenship, London, Oxford University Press.
Rosenberg, S. (1977) 'The Marxian Reserve Army of Labour and the Dual Labour Market', Politics and Society, Vol. 7, No. 2, pp.221-28.
Ross, A.M. (1958) 'Do we have a New Industrial Feudalism ?', American Economic Review, Vol. 48, pp.903-20.
Ross, I.C. and Zander, A. (1957) 'Need, Satisfactions and Employee Turnover', Personnel Psychology, Vol. 10, pp.327-38.

Saleh, S.D., Lee, R.J. and Prien, E.P. (1965) 'Why Nurses Leave Their Jobs - an analysis of Female Turnover', Personnel Administration, Vol. 28, pp.25-28.
Schiller, B.R. (1977) 'Relative Earnings Mobility in the United States', American Economic Review, Vol. 67, No. 5, pp.926-941.
Schultz, T.W. (1963) The Economic Value of Education, New York, Columbia University Press.
Shorey, J. (1980) 'An Analysis of Quits Using Industry Turnover Data', Economic Journal, Vol. 90, pp.821-37.
Shorey, J. (1983) 'An Analysis of Sex Differences in Quits', Oxford Economic Papers, Vol. 35, pp.213-27.
Silcock, H. (1954) 'The Phenomenon of Labour Turnover', Journal of the Royal Statistical Society, Series A, Vol. 117, pp.429-40.
Silcock, H. (1955) 'The Recording and Measurement of Labour Turnover', Personnel Manager, Vol 37, pp.71-78.
Singer, C. (1970) 'Labour Turnover Rates - an International Comparison', Personnel Practice Bulletin, Vol. 26, No. 2,

pp.109-14.
Skinner, E. (1969) 'Relationships Between Leadership Behaviour Patterns and Organisational Situational Variables', Personnel Psychology, Vol. 22, pp.489-94.
Slichter, S.H. (1919) The Turnover of Factory Labour, New York, Appleton.
Stevenson, M. (1975) 'Women's Wages and Job Segregation' in Edwards, R.C. et al. (eds.) (1975), pp.243-55.
Stoikov, V. and Raimon, R.L. (1968) 'Determinants of Differences in the Quit Rate Among Industries', American Economic Review, Vol. 58, pp.1283-98.
Stone, K. (1975) 'The Origins of Jobs Structures in the Steel Industry' in Edwards, R.C. et al. (eds.) (1975), pp.27-84.
Symes, N.G. (1947) 'Statistics and Personnel Management', Personnel Management, Vol. 29, pp.212-18.

Talacchi S. (1960) 'Organisation Size, Individual Attitudes and Behaviour: an Empirical Study', Administrative Science Quarterly, Vol. 3, pp.398-420.
Tavernier, G. (1967) 'Turnover', Personnel Management, June. Referred to in Van Der Merwe, R. and Miller, S. (1971).
Taylor, K.E. and Weiss, D.J. (1969) 'Prediction of Individual Job Turnover from Measured Job Satisfaction', Work Adjustment Project, Research Report No. 22, University of Minnesota.
Telly, C.S., French, W.L. and Scott, W.G. (1971) 'The Relationship of Inequity to Turnover Among Hourly Workers', Administrative Science Quarterly, Vol. 16, pp.164-72.
Telser, L.G. (1971) Competition, Collusion and Game Theory, London, Macmillan.

Ulman, L. (1965) 'Labour Mobility and the Industrial Wage Structrue in the Post-War United States', Quarterly Journal of Economics, Vol. 79, pp.73-97.
United States Bureau of Labour Statistics (1918) 'Standard Definition of Labour Turnover and Method of Computing the Percentage of Labour Turnover', Industrial Management, No. 56. p.246.

Van Der Merwe, R. and Miller, S. (1971) 'The Measurement of Labour Turnover: a Critical Appraisal and a Suggested New Approach', Human Relations, Vol. 24, No. 3, pp.233-53.
Van Der Merwe, R. and Miller, S. (1973) 'Near-Terminal Labour Turnover: an Analysis of a Crisis Situation', Human Relations, Vol. 26, No. 4, pp.415-32.
Van Der Merwe, R. and Miller, S. (1975) 'The Measurement of Labour Turnover' in Pettman, B.O. (ed.) (1975), pp.1-30.
Vietorisz, T. and Harrison, B. (1970) The Economic Development of Harlem, New York, Praeger.
Vroom, V.H. (1964) Work and Motivation, New York, John Wiley and Sons.
Wabe, J.S. and Leech, D. (1978) 'Relative Earnings in U.K. Manufacturning - A Reconsideration of the Evidence', Economic

Journal, Vol. 88, pp.296-313.
Wachtel, H.M. (1970) 'The Impact of Labour Market Conditions on Hard-Core Unemployment: a Case Study of Detroit', Poverty and Human Resources, July- August, pp.5-13.
Wachtel, H.M. (1975) 'Class Consciousness and Stratification in the Labour Process' in Edwards, R.C. et al. (eds.) (1975), pp.95-122.
Wachter, M.L. (1974) 'Primary and Secondary Labour Markets: a Critique of the Dual Approach', Brookings Papers on Economic Activity, 3:1974, pp.637-680.
Wales, T.J. (1970) 'Quit Rates in Manufacturing Industries in the United States', Canadian Journal of Economics, Vol. 3, pp.123-39.
Walker, K.F. and Lumbsden, J. (1963) 'Employees Job Satisfaction and Attitudes: A Survey', Business Review, Vol. 6, pp.20-24.
Walters, J.E. (1931) Applied Personnel Administration, New York, John Wiley and Sons.
Wanous, J.P. (1980) Organisational Entry: Recruitment, Selection and Socialisation of Newcomers, Reading Massachusetts, Addison-Wesley.
Waters, L.K. and Roach, D. (1971) 'Relationship Between Job Attitudes and Two Forms of Withdrawl from the Work Situation', Journal of Applied Psychology, Vol. 55, No. 1, pp.92-94.
Watkins, G.S. and Dodd, P.A. (1938) The Management of Labour Relations, New York, McGraw-Hill.
Weisskoff, F.B. (1972) '"Women's Place" in the Labour Market', American Economic Review, Vol. 62, pp.161-66.
Wieland, G.F. (1969) 'Studing and Measuring Nursing Turnover', International Journal of Nursing Studies, Vol. 6, pp.61-70.
Wild, R. (1970) 'Job Needs, Job Satisfaction and Job Behaviour of Women Manual Workers', Journal of Applied Psychology, Vol. 54, pp.157-62.
Wilkinson, F. (1981) (ed.) The Dynamics of Labour Market Segmentation, London, Academic Press.

Young, A. (1965) 'Models for Planning Recruitment and Promotion of Staff', British Journal of Industrial Relations, Vol. 3, pp.301-10.
Young, A. (1971) 'Demographic and Ecological Models for Manpower Planning' in Bartholomew, D.J. and Morris, B.R. (eds.) (1971) Aspects of Manpower Planning, London, English University Press, pp.75-97.
Young, R.J. (1950) 'Reduce Excessive Turnover Costs Through Proper Analysis', Personnel, Vol. XXVII, No. 1, pp.75-79.

Zellner, H. (1972) 'Discrimination Against Women, Occupational Segregation, and the Relative Wage', American Economic Review, Vol. 62, pp.157-60.